# THE IRON AGE

New York, Thursday, September 6, 1906.

## The Steel Foundry at Cincinnati.

An announcement was made in the columns of *The Iron Age* several months ago that the Steel Foundry Company, the only concern of its kind in the vicinity of Cincinnati, had made its initial run of metal, and that all of the indications were for a very successful year. Cincinnati has a number of foundries where gray iron castings are made, which are noted for the excellent quality of the work turned out, but local manufacturers have always had to depend on outside towns for any steel castings required. Owing to the difficulty experienced by local builders of tools in receiving supplies of this nature, it was deemed advisable to relieve the situation, and consultations held for that purpose resulted in the forming of the Steel Foundry Company. All of the stock was taken by Cincinnati manufacturers, among whom were several machine tool builders, who not only placed the plant on a sound financial basis, but are now devoting a portion of their time to looking after its interests in many directions.

Fig. 1.—View in the Central Bay of the Steel Foundry, Cincinnati, Ohio.

The site selected at Winton place, Cincinnati, has exceptionally good railroad facilities, and the product of the plant can be shipped and raw material received directly into the plant by track connections with the Baltimore & Ohio and the Cincinnati, Hamilton & Dayton railroads. The construction of the plant, a plan of which is given in Fig. 2, began early in the spring of this year. It includes a two-story brick office building, 30 x 90 ft., containing on the first floor the office, chemical laboratory, storeroom and power plant, and on the second floor the drafting room, testing laboratory and pattern shop. The power plant comprises two Geary water tube boilers and a 200-hp. engine direct connected to a 125-kw. generator furnishing current at 220 volts. The laboratory where tests are made of both the materials used and the finished product is complete in all its details and is in charge of an expert chemist.

The foundry building proper is 135 x 260 ft., and was built by the Pittsburgh Bridge & Iron Works Company. This building consists of a main bay 66 ft. 6 in. wide and 35 ft. high to the bottom of the roof trusses, and a bay on each side of the main bay 34 ft. wide and 16 ft. high. The crane runway in the central bay is designed for a 15-ton crane, shown in Fig. 1, which runs the length of the building. One of the side bays is reserved for bench molding and the other for furnaces, &c. The bench molding side is also provided with crane service by a 5-ton crane running its length. Two sliding doors at each end of the building permit the entrance of a locomotive and box cars. The main bay is lighted by two rows of windows in the monitor and two additional rows under the eaves. The bays are lighted by a continuous row of windows about 4 ft. from the ground. The roof and sides of the building are covered with corrugated steel sheeting, and the general design of the building follows the usual practice with respect to trusses, columns, girders, purlines, girts, &c. The main trusses are of the Fink type, and the girders are built of plates and four angles.

The west bay contains the furnaces, sand bins, core department and flask shop, and the east bay has the annealing oven, cleaning department, machine shop and mold drying oven. An industrial railway operates throughout the plant, facilitating the handling of heavy castings. At the north end of the building there is a yard for the storing of pig iron and scrap, which is connected with the works by an incline railway electrically operated. The furnace equipment consists of one 15-ton acid open hearth and one 20-ton basic open hearth furnace. Both are of the stationary hearth type, and the checker work is situated beneath the furnace. Crude oil is used

for fuel, the air passing through the checker work only. The furnaces are charged by hand, and the metal tapped into ladles in the main bay, as shown in Fig. 3.

The core department adjoining the sand bins contains two large brick ovens 8 x 8 x 16 ft., at the back of which are two Hill & Griffith ovens with swinging shelves. For finishing and cleaning the castings pneumatic chipping hammers are used almost exclusively. For the annealing of truck frames and other special castings there is provided an oven of the same size, heated with crude oil. Compressed air is supplied by a Laidlaw-Dunn-Gordon duplex two-stage air compressor, having a capacity of 1000 cu. ft. of free air per minute at 100 lb. pressure.

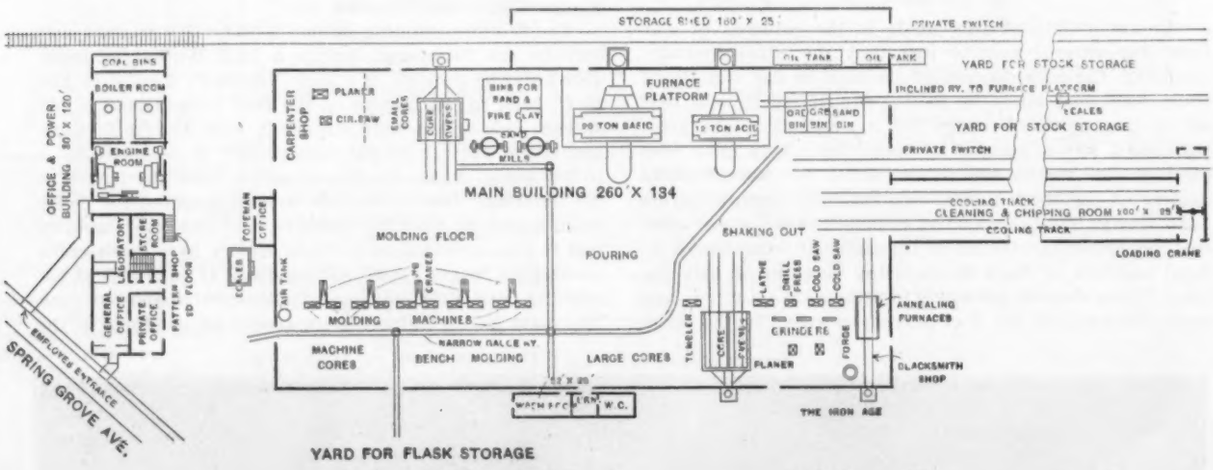



Fig. 2.—Plan of the Steel Foundry Company's Plant, Cincinnati, Ohio.

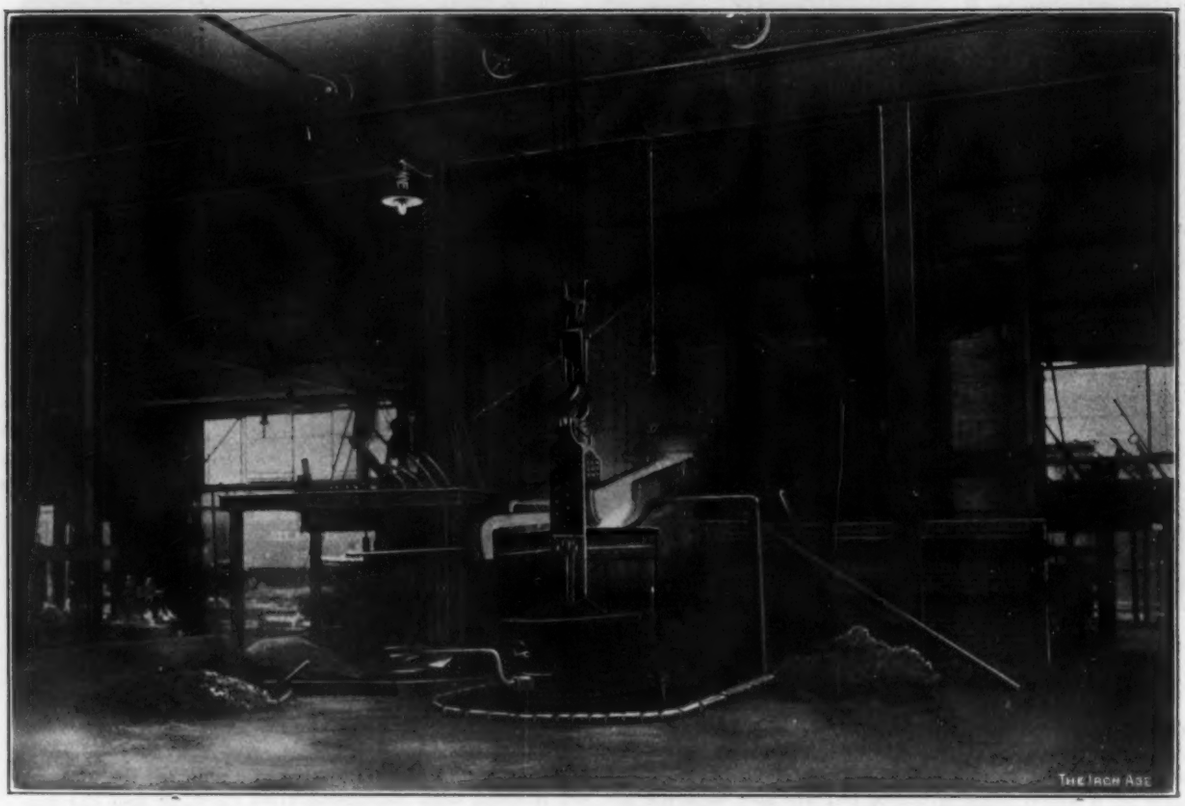



Fig. 3.—View of One of the Open Hearth Furnaces in the Steel Foundry.

Of the employees of the railroad systems of the United States, a fact not generally recognized is that only one-fifth are employed upon the trains. Such, however, is the case, for of the 1,296,121 persons in the service in 1904 only 254,000 were so employed. Counting 212,243 miles of main line track, this gives a total of 611 employees per 100 miles, of whom 120 were accounted for upon the trains. At that time the average daily pay of the general officers was $11.61; other officers, $6.07; general office clerks, $2.22; station agents, $1.93; enginemen, $4.10; conductors, $3.50; train dispatchers, $2.15.

Injecting liquid cement by air pressure through a series of holes drilled through cellar and basement and all other underground walls has been recommended by a German engineer as a good way of making them watertight. An ordinary hand force pump, connected by hose with the vessel containing the cement and a suitable delivery pipe and jet are all that is necessary. Strictly speaking, this is simply one form of grouting, but for ordinarily inaccessible places it would seem to serve well. It is said to have been applied with excellent results in a damp tunnel, where numerous holes were drilled in the crown and cement forced in. Where there is a considerable flow of water to contend with the cement may be made quick-setting by adding a solution of soda, when the setting takes place within a few minutes.

## The Garvin Two-Spindle Profiler.

The type of profiling machine shown in Fig. 1 and built by the Garvin Machine Company, New York, is

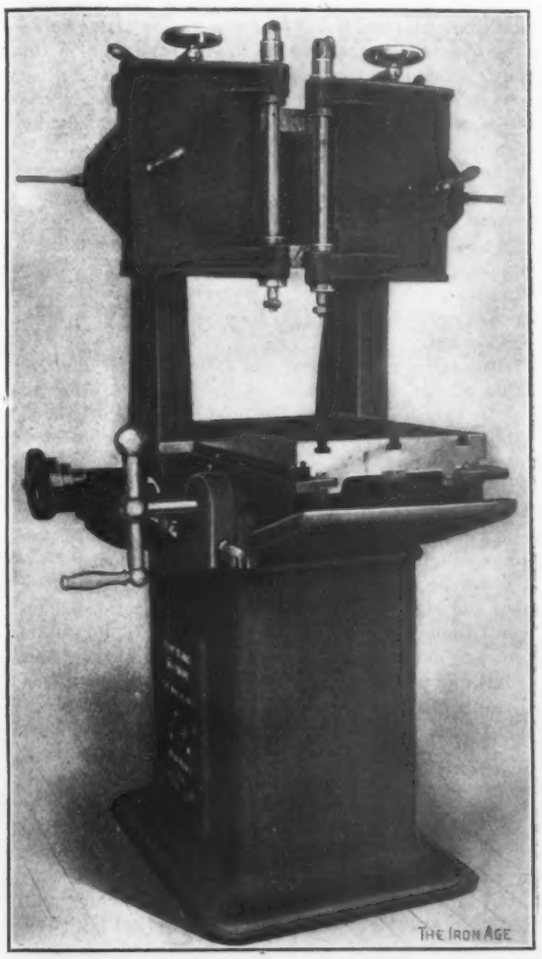



Fig. 1.—A Two-Spindle Profiling Machine Built by the Garvin Machine Company, New York.

adapted for that wide class of work wherein it is necessary to mill two surfaces, channel grooves, or ways, and

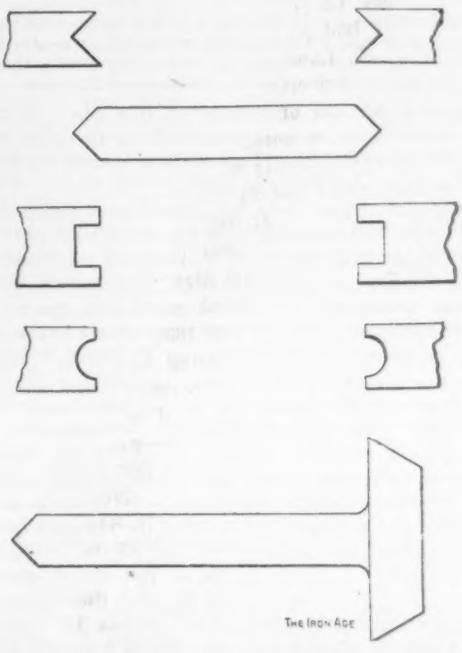



Fig. 2.--Examples of Work That Can Be Done on the Garvin Profiler.

to maintain these milled surfaces up to gauge distance apart. The sketches given in Fig. 2 show different kinds of work that fall within the province of this machine. The work might be done by milling one side at a time, but it would require two settings of the work or tool, and, it is claimed, involve a loss of 50 per cent. in producing capacity, as compared with milling both sides at once. A single cutter would not be practicable, because when ground its absolute size is lost, and it cannot be used at all when the two cuts differ in section. When the ways are milled the next task is to mill the slide to fit it, and this involves the same problem.

To fulfill the special requirements of such cases, this machine has two spindles, which are adjustable to and from each other, and staggered one in front of the other to give room for substantial spindles and bearings and permit the center distance sideways to be brought down to ⅞ in. The spindle slides have independent micrometer vertical adjustment and are fitted with binder handles for both adjustments. The spindles have taper top and bottom bearings and are driven on the Wesson system by universal joints and rods from a special countershaft on the ceiling, which can be run at high speed and requires no room for belt pulleys on the spindle.

A large table, 16 x 24 in. is provided for the work and fixtures, and any special requirements in hight and width of uprights can be arranged for. Power feed with reverse and automatic trip are provided, which conduces to more uniform work than hand feed alone. The machine weighs 2460 lb., and has three changes of speed and twelve changes of feed.

## The German Cast Iron Pipe Syndicate.

Some facts are given by the London *Iron and Coal Trade Review* concerning the German Cast Iron Pipe Syndicate, which was renewed early this year until March 31, 1908. The governing body is a council, and each works having a 10 per cent. additional allotment or more names a member. The council appoints the managing committee. The members agree to sell to the syndicate all their output except certain unusual sizes of socket pipe. Small orders of not more than 10 tons may be forwarded directly from works to buyers, but otherwise all sales are made by the syndicate. The makers are not to seek to increase their production by extending their plant or by new works, except with the consent of the managing committee. When sales are not in accordance with allotments, works which are in excess pay the syndicate a fine, while those in arrears receive an indemnity from the syndicate for the less quantity sold on their behalf, on condition that it is proved that they were in a position to make delivery. In placing orders the syndicate takes into account location and the previous relations of customer and seller. Exports do not figure in the allotments for inland trade, but so far as possible such business is to pass through the syndicate's hands. The managing committee controls expenses and has the right to examine books and documents of makers. Fines are deducted from the members' deposits, these latter amounting to not over $1250 for any works.

**The Russian Machinery Trade.**—The London *Engineer*, referring to the machinery trade with Russia, says that British manufacturing engineers are fortunate in having few commitments in that country at present. While Germany, Austria, Switzerland, Belgium, and to some extent France, have looked upon Russia as a good field for financial speculation, which has been the powerful lever in favor of their manufacturers seeking trade there, Great Britain has had few financial connections with Russian enterprises. For that reason she does not now find herself so heavy a loser by the Russian disasters as her neighbors. It is stated that while the destruction of machinery in Russia has been considerable in the recent disturbances, it forms a very small percentage of the whole. A few orders have been received in Great Britain for the replacement of destroyed plants. The *Engineer* says that while many British manufacturers would not at present undertake any sort of business risk in dealing with Russia, some of them do not share this view.

## A Labor Law Declared Invalid.

For many years the Williams Printing Company, a concern affiliated with but entirely separate from the David Williams Company, publisher of *The Iron Age*, has employed in its bindery, in the production of a number of journals, a considerable force of women. The exigencies of promptly mailing the publications have demanded that the bindery be operated several nights in the week. The relations between the female employees and the company have been entirely satisfactory during that prolonged period, until the company was advised by the Labor Commissioner of the State of New York that it was violating that part of the general laws relating to labor which provides that no female shall be employed or permitted to work in any factory before 6 o'clock in the morning or after 9 o'clock in the evening of any day, &c. Convinced that the act so far as it relates to the employment of females at night was an unwarranted invasion of constitutional rights of individual liberty and property the management of the Williams Printing Company decided to test the law, and after some conference with printing concerns similarly situated undertook the contest single handed and at its own expense.

The case was brought to an issue before the Court of Special Sessions of the First Division of the City of New York, Julius M. Mayer, Attorney-General, being for the people, and Henry B. Corey of Douglass & Minton, with whom was associated Frederick B. House of House, Grossman & Vorhaus, for the defendant, David L. Williams, an officer of the Williams Printing Company.

The decision, which was written by Judge Willard H. Olmsted, contains the following:

At twenty minutes after 10 o'clock on the night of January 31, 1906, a deputy factory inspector visited the bookbinding establishment of the defendant, No. 437 Eleventh avenue, in the County of New York, and there found one Katie Mead, a female, more than 21 years of age, and a citizen, employed in "gathering," to wit, assembling printed papers in the form of a book or pamphlet for binding purposes. The defendant, one of the proprietors of the establishment, was present and in charge of the work and the employees, and among them were several other women. There is no pretext that the building was insecure, the light bad, ventilation defective, or the general sanitary condition deficient. In these respects the deputy testified, "It is the best factory of the kind in New York City."

The information upon which the defendant was tried and convicted charges a misdemeanor under Section 77, Article 6, entitled "Factories" of the General Laws relating to labor, in that he employed, permitted and suffered the said Katie Mead to work in that factory after 9 o'clock at night on the date specified.

So much of the section as is pertinent to the present inquiry is as follows:

> No minor under the age of 18 years and no female shall be employed, permitted or suffered to work in any factory in this State before 6 o'clock in the morning or after 9 o'clock in the evening of any day, or for more than 10 hours in any one day, except to make a shorter workday of the last day of the week; or for more than 60 hours in any one week or more hours in one week than will make an average of 10 hours per day for the whole number of days so worked.

The remainder of the paragraph makes provision for a schedule of the hours per day during which each person shall be employed, and grants permission for them to begin work after 6 o'clock and to quit before 9 o'clock, "but they shall not otherwise be employed, permitted or suffered to work in such factory, except as stated therein."

Section 384-L of the Penal Code provides that:

> Any person who violates or does not comply with (1) the provisions of article 6 of the Labor Law relating to factories . . . is guilty of a misdemeanor.

The establishment of the defendant, where Katie Mead was working, was a factory within the statutory definition, viz.: "The term factory when used in this chapter shall be construed to include also any mill, workshop or other manufacturing or business establishment where one or more persons are employed at labor." (Art. 1, Sec. 2.)

No issue of fact was raised on the trial. The people called the deputy inspector to prove the bare facts of employment after prohibited hours in a factory and defendant's connection therewith and rested. The defendant offered no evidence and was thereupon found guilty. Upon a motion in arrest of judgment defendant's counsel contends, first, that Section 77 of the Labor Law, under which the conviction was had, is in contravention to the Fourteenth Amendment of the Constitution of the United States, in that it is an infringement of the privileges and immunities of the citizen of the United States and denies to women the equal protection of the laws; second, that it contravenes Article 1, Section 6 of the State constitution, in that it deprives a citizen of her liberty and property without due process of law.

The question of the constitutionality of the statute having arisen in a way permitting an appeal by either side, it is as much a duty of this court to pass thereon as it is, upon evidence, to pronounce judgment of acquittal or conviction.

To labor and employ labor are inherent and inalienable rights of our citizens, and cannot be taken away in whole or in part unless upon the broad ground of public good, which must be apparent and cannot be predicated on legislative dictum.

It may be stated as a well settled legal proposition that the right to labor and to contract for that labor is both a liberty and a property right; when, therefore, the Legislature enacts a statute such as that under consideration it must be admitted that it has infringed in the enactment the rights which are very clearly accorded by the Constitution to the individual citizen. The people, therefore, are called upon to justify this invasion, and there is but one plea of justification, that the statute was enacted to protect the comfort, welfare and safety of the whole people, and the individual must suffer this curtailment of his granted rights in the interest of the common good.

In the case under consideration the right of the employed and the right of the employer are equally involved. Nothing to the contrary appearing, it must be assumed that the woman was a willing worker for a willing employer, and that the result was mutually satisfactory and profitable. No argument is needed to show that both the employer and employed have been restricted in their rights by the law in question. Was this restriction within the constitutional power of the Legislature? The provision of the State constitution invoked by the defendant is:

> No person shall . . . . be deprived of life, liberty or property without due process of law (Art. 1, Sec. 6).

A correlated section is Section 1 of the same article:

> No member of this State shall be disfranchised or deprived of any of the rights or privileges secured to any citizen thereof unless by the law of the land or the judgment of his peers.

The first legislative enactment in this State looking to the protection of women employed in factories was chapter 409, Laws of 1886. This statute formed the basis of what is now the Factory Law of the State. Prior thereto the law-making body had passed acts (chap. 856, Laws of 1867, and chap. 385, Laws of 1870) in which women were not referred to as a class, but might be included in the general designation of "mechanics, workingmen and laborers." It will be noted that the provisions of chapter 409, Laws of 1886, only relate to the employment of women under the age of 21 years (minors, and as such, wards of the State). It did not prevent their employment at night. Not until 1889 (chap. 580, Laws of 1889) was any inhibition against nightwork injected into the statute. It was continued in chapter 398, Laws of 1890, and chapter 673, Laws of 1892, and in the Act of 1897, when the several acts relating to labor were codified and became chapter 32 of the General Laws. No attempt was made to restrict the rights of women other than those of minor wards of the State—women under the age of 21 years. It was not until 1899 that the Legislature undertook to enact that "no woman" should work in a factory after 9 p.m. and before 6 o'clock a.m., and it is under this statute that the criminal action we are now considering was brought.

The general regulation of the hours of labor of the working classes in this State is to be found in section 3 of this same chapter, which reads in part as follows:

Eight hours shall constitute a legal day's work for all classes of employees in this State, except those engaged in farm and domestic services, unless otherwise provided by law. This section does not prevent an agreement for overwork at an increased compensation, except upon work by or for the State or a municipal corporation or by contractors or subcontractors therewith.

The present constitution of the State of New York was adopted in 1894, and became effective January 1, 1895. All of the rights which adult women citizens possessed at that time were confirmed by that document. One of those rights certainly was the right to contract for her labor and to work when and where she pleased, without reference to the position of the hands upon the dial of the clock. It was not until four years after that the lawmaking power sought to place the limitation under consideration upon them. What was the legislative intent in doing this? The Attorney-General finds and urges no other reason than that the general welfare of the State demands that the progeny of women of the factories shall have mothers with healthy bodies to the end that the State may have sturdy citizens. Does the State look merely to the children of factory women for its future good citizens? Why should the housewife, the woman who toils at home, in mercantile houses, in offices, or she who toils not at all—the society woman—be exempt from legislative interference, injunctive or mandatory, for the same reason? Some of them may be mothers of future citizens, and it should be of as great interest to the State that their progeny should have proper birth and breeding, to conserve its welfare. If this question of future citizenship is the only excuse for this assumption of police power, what becomes of the rights of the nonchildbearing woman, a considerable class? What of the woman beyond the age of childbearing, physically strong, having expert technical knowledge, with opportunity to employ it in a factory and at no other time than during the hours which the statute prohibits—a woman who is *sui juris* and who is desirous of exercising her right of contract and to work at her accustomed trade, but is prevented from doing so by this statute? Surely, upon the theory of the Attorney-General, the general welfare is not concerned in the matter of her employment. With no other excuse this statute would appear to be most palpable special class legislation.

Upon this question of the right of the State to exercise its police power for the promotion of a strong and robust future citizenship, the Supreme Court of the United States had the following to say in the case of Lochner v. New York (supra):

It is also urged, pursuing the same line of argument, that it is to the interest of the State that its population should be strong and robust, and therefore any legislation which may be said to tend to make people healthy must be valid as health laws enacted under the police power. If this be a valid argument and a justification for this kind of legislation, it follows that the protection of the Federal Constitution from undue interference with liberty of person and freedom of contract is visionary, wherever the law is sought to be justified as a valid exercise of the police power. Scarcely any law but might find shelter under such assumptions, and conduct properly so called, as well as a contract, would come under the restrictive sway of the Legislature. Not only the hours of employees, but the hours of employers could be regulated, and doctors, lawyers, scientists, all professional men, as well as athletes and artisans, could be forbidden to fatigue their brains and bodies by prolonged hours of exercise, lest the fighting strength of the State be impaired. We mention these extreme cases because the contention is extreme. We do not believe in the soundness of the views which uphold this law. On the contrary, we think that such a law as this, although passed in the assumed exercise of the police power, and as relating to the public health, or the health of the employees named, is not within that power, and is invalid. The act is not within any fair meaning of the term a health law, but is an illegal interference with the rights of individuals, both employers and employees, to make contracts regarding labor upon such terms as they may think best, or which they may agree upon with the other parties to such contracts. Statutes of the nature of the one under review, limiting the hours in which grown and intelligent men may labor to earn a living, are mere meddlesome interferences with the rights of the individual.

Women are here classed with minors under the age of 16 years. All minors are wards of the State, and this classification of women with children seems to be an attempt to relegate women to their old position as dependent State wards. That women have not yet been accorded equal liberty under the laws with men must be admitted. They never were, however, in the same class as to wardship with children, and the whole trend of modern legislation has been toward their emancipation from legal disabilities and a continued enlargement of their rights, particularly of property and of contract. This legislative emancipation has been supplemented by modern social development, which has resulted in the employment of women in all sorts of callings where their labor has come in competition with that of men. This to the extent of almost wholly supplanting men in some fields of labor.

It must be apparent that women, considered in the matter of their employment, should not need the same paternal protection that is accorded by the State to its minor wards. The reason for the prohibition under consideration, therefore, is not to be found in the right of the State to control the action of its wards, although the classification of women with children in the statute suggests it.

The people contend that the law is a health regulation and that its purpose is to protect the health of a large class of the community—*i.e.*, women employed in factories—and being an enactment of that character, in the interest of health and the public welfare, it is wholly within the police power of the State, and in no sense derogatory of the constitutional rights of the citizen. Is it such a health regulation?

There are fifteen sections of Article 6 of the Labor Law which follow section 77. Fourteen of them are devoted to provisions for the health, safety and welfare of persons employed in factories. They relate to the operation and protection of elevators and hoisting shafts, provisions for proper stairs and doors, special protection of employees operating machinery, provision of ample fire escapes, washrooms and water closets, the size and cleanliness and ventilation of rooms, the reporting of accidents, inspection of boilers, employment of persons at polishing and buffing, and the requirement that sufficient time shall be accorded employees to secure their meals, together with a general power of inspection and regulation in the factory inspector. It is apparent on the face of these statutes that their purpose is to protect the health and safety of persons employed in factories and so to promote the public welfare. This purpose is not apparent on the face of the section under consideration.

The provision of the statute against the employment of women more than a certain number of hours a day or week might be considered a health regulation and within the powers of the State, although the Supreme Court of the State of Illinois (Ritchie v. People, &c., supra) held such a law to be unconstitutional. But there is nothing in the prohibition of the section in question which indicates that its object is to promote the health or the public welfare. Had the statute been so framed as to provide that none of the employment of women for 60 hours a week or 10 hours a day should be between 9 p.m. and 6 a.m., or had it provided that women might work only a limited time after 9 o'clock p.m. and before 6 o'clock a.m. if they were employed during other hours of the day, its object as a health regulation might be apparent. When, however, it is so drawn as to prevent an adult citizen from exercising her right to contract for employment, even for so limited a period as one hour during the prohibited time, it cannot properly be considered a health regulation, and is apparently an unreasonable and unwarranted infringement of the constitutional right of the individual, and not only of her right, but also of the right of him who would contract for her employment.

Is this plainly and palpably a health regulation in the interest of the common good? Is it not plainly and palpably an unauthorized and unwarrantable interference with the constitutional rights of the citizen?

The statute which would prevent Katie Mead from working in a factory after 9 o'clock at night, under the best sanitary conditions, offers no prohibition against her doing the same work in a hall bedroom in a tenement house, under conditions more detrimental to her health. She may work at her usual employment all night if she so pleases and the State does not interfere to prevent possible injury to her possible children who may be its future citizens.

We can arrive at no other conclusion than that there has been in this enactment an unwarranted invasion of the constitutional rights of individual liberty and property; that for this reason the information of the district attorney herein does not state facts constituting a crime. The motion in arrest of judgment is granted and the defendant discharged. All concur.

Such are the main points of the decision of the court. The people have appealed, so that the case will be finally tested and decided.

## Canada's Want of Labor.

TORONTO, September 1, 1906.—The problem that above all others is perplexing conductors of enterprises in this country is that of manning their undertakings. Labor is scarce in every department of production. The effect is experienced not merely in the enhancement of cost, but in the enforced restriction of operations. Though prices of all products have risen by great percentages from the level of even a few years ago they apparently have not yet reached the summit at which consumption begins to fall off. Consumption keeps up, goes on increasing and supplies all the motive power for increased efforts on the part of producers. These could materially enlarge their output without satisfying the demand. The reason that the country is not producing more of nearly everything is not that the present high cost has caused a contraction of the market, but that production is limited by a shortcoming in the physical power of labor. High wages fail to attract all the hands that are required.

In this fact, which is one of some years' standing, is to be found part of the explanation of the progressive increase in the country's imports of manufactured goods. Had Canada had all the labor its employing producers wanted the United States would not have sold $180,000,000 worth of merchandise here in the last fiscal year. A change in the labor conditions in their favor would probably be of more benefit to the Canadian manufacturers than a favorable change in the tariff duties.

### The Unions Blamed in Part.

For the scarcity of skilled labor the unions are to be blamed, at least in part. They are strong enough politically to impose their will on the Dominion Government in the matter of immigration. In obedience to their fiat the Government instructed its immigration agents in the United Kingdom and on the Continent to direct their efforts to the encouraging of agricultural laborers and untrained workers generally. As a consequence the country has been receiving comparatively few artisans among its immigrants, and those it has received—mostly through media that are independent of the Immigration Department—are thoroughly disciplined unionists, at least as loyal to their organizations as to their employers.

The Canadian Manufacturers' Association has agencies in Great Britain, but so far the benefit has been below expectations. This may be due to some understanding between the associated labor interests in Canada and those in the United Kingdom. Such an understanding would tend to thwart efforts of the Canadian manufacturers to get union men on the other side of the Atlantic, and the experience some British nonunion men had here in the Canada foundry and elsewhere would deter the immigration of nonunionists. Of the sympathy, if not understanding, that holds between the union forces here and in Great Britain the fiscal resolution of the Canada Trades and Labor Congress last year was an evidence. That resolution was against Chamberlainism, as against protection for Canada, the reason stated for its anti-Chamberlain proposition being that it would be unfraternal for the Canadian unions to support a policy of which the effect would be to increase the cost of the British workers' loaf.

### British and Canadian Unions Co-operate.

The presence in Canada at this time of John Ramsay MacDonald, M. P., Secretary of the Independent Labor Party in the United Kingdom, is a sign of co-operation between the British and the Canadian laborites. Shortly after his arrival he expressed his conviction that much good could come from more intimate relations between organized labor in Great Britain and organized labor in Canada. He felt that Canadian labor had yielded too much to the affinity exerted by American labor, for he had observed that the international labor organizations have as much authority here as in the United States. His criticism of the unions in Canada is that they are weak and backward, by comparison with those in Great Britain, a difference he attributes to the fact that Canada is fundamentally an agricultural country, whereas Great Britain is as distinctively a manufacturing country.

The return to the British House of Commons of 30 candidates of the Independent Labor party has put heart into the Canadian unions, and it is expected that they will very generally dissociate themselves from the old parties and contest many constituencies with candidates of their own at the next general election. Some indication of their readiness for the campaign was given when they captured the seat for one of the divisions of Montreal district in a recent bye-election. The success of the British Independent Labor party, not only at the polls but in the House, has developed in that party a propagandist spirit, of which Mr. MacDonald is to be regarded as the missionary in this country and New Zealand. Next election the labor party will be a reality in Canadian politics, for it will have candidates in the urban constituencies.

### Scarcity of Labor in Nova Scotia.

John MacDougald, Commissioner of Customs, who has recently returned to Ottawa from a tour of the customs ports in the Maritime Provinces, reports a marked scarcity of labor there, especially in Nova Scotia. In consequence of that scarcity operations are being curtailed at the coal mines, and to some extent at the iron and steel works. Skilled labor for steel plants is not easily obtainable anywhere, there being at present no floating supply in the United States, whence help has heretofore been drawn by the steel companies. Canada's alien labor act is in working order again, though as a check upon the supply it is a negligible factor, when so many other influences are at work to make a vacuum in the labor market. Upward of a year ago the deportation section of the act was declared by a judge of the High Court of Ontario to be *ultra vires*. His judgment was recently reversed by a decision of the Judicial Committee of the Privy Council in England, the final court of appeal within the British Empire.

### Agricultural Labor Also Scarce.

In spite of the well-sustained immigration of this country Canada lacks agricultural labor no less than it lacks skilled labor. The scarcity of hands to till the land and take off the crops is beginning to tell upon the price of farms in some of the finest agricultural areas of Ontario. Of the 150,000 to 200,000 foreigners arriving every year the majority appear to become homesteaders in Manitoba, Saskatchewan and Alberta. The cry of the farmers is being taken up loudly by the contractors who are building sections of the eastern and of the western divisions of the National Transcontinental Railway, as well as by those who have the new construction of the Canadian Pacific and the Canadian Northern in hand. These contractors are offering wages that must seem very tempting to men who were last year working at rates 20 to 30 per cent. lower. C. A. C. J.

The new warehouse and office building of the Crucible Steel Company of America at 64 and 66 South Clinton street, Chicago, has been completed and the stock of Park and Howe-Brown brands of steel has been removed from the warehouse at 50 and 52 South Clinton street, which has been abandoned. The new building is three stories in hight and of brick construction. The office which had been maintained at 52 West Washington street has also been removed to the new location. All of the stocks of Park, Crescent, Sanderson and Howe-Brown brands of steel will be carried in the new warehouse, which will enable the company to handle the city business to better advantage than heretofore. One of the largest stocks of high grade steel in the country will constantly be carried.

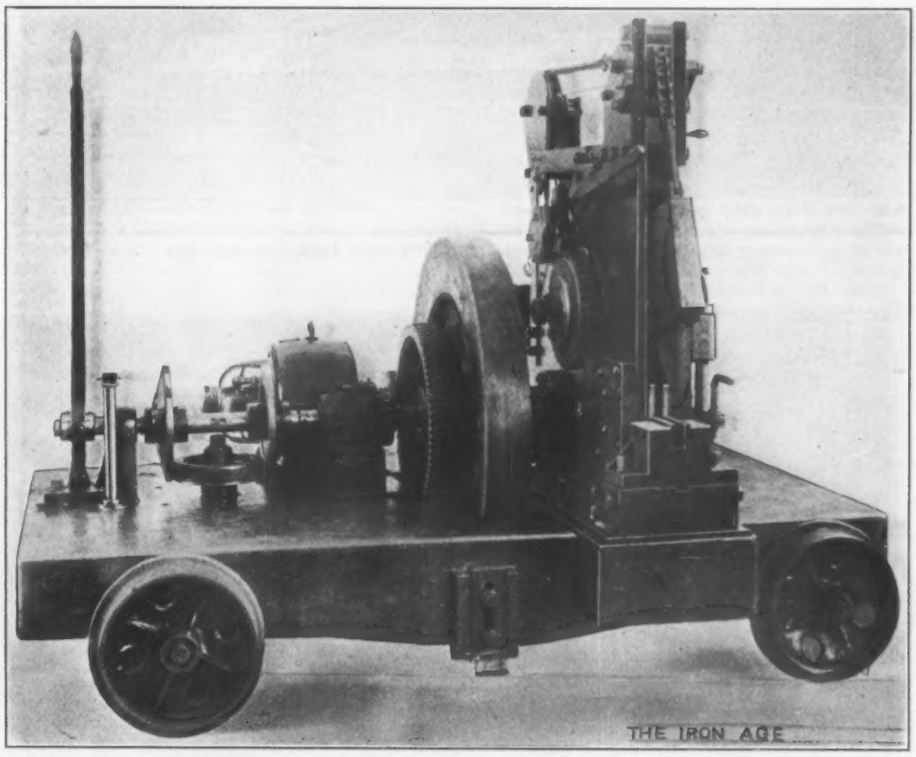
## A Johns Locomotive Beam Shear.

With contained motor drive, used both for operating the shear and transporting it on its truck, the Johns patent beam shear, type T 30, is illustrated herewith. The outfit is one originally built for the steel works of Schneider & Cie, Creuzot, France, by Henry Pels & Co., of New York, London and Berlin.

The motor, built by the General Electric Company, Berlin, runs at 940 rev. per min. and is of 7½-hp. capacity, or ample to provide the necessary 6 hp. for operating the shear at its full capacity. To propel the truck at a speed of 65 ft. per min. 1½ hp. is required. The motor, through one gear reduction, drives the driving shaft of the shear, carrying the flywheel. An extension of this shaft, capable of slight endwise movement, carries two friction disks, either one of which may be brought to bear against a leather bound friction wheel on a short vertical shaft extending down through the floor of the truck. The lower end of this shaft carries a worm meshing with a worm wheel keyed to the adjacent truck axle. The vertical lever at the right in the illustration controls the friction disks, one extreme of its movement causing the truck to travel in one direction and the other the reverse direction, while its mid-position disengages both disks, allowing the machine to stand still during the operation of the shear. The truck can be started or stopped gradually by grading the contact pressure between the friction surfaces, full speed being obtained when the lever is thrown to the extreme of its movement. Electric current is brought to the motor by a long cable, which is automatically wound or unwound as the machine travels toward or away from the point where the current is obtained.

The shear is of the steel plate construction which distinguishes the Johns punching and shearing machinery, and cuts the beams, channels, angles or other structural shapes in a very unique way. The upper knife penetrates the material, which is placed on the lower holder, acting against the back knives, and cuts with great rapidity through the webs and flanges of the beams. Then the beam or channel is turned for a second cut. Angles and tee bars are cut with one operation. The rapidity with which the upper knife is forced through the material is developed through a combination lever system known as the Johns lever mechanism, which was described in *The Iron Age*, June 22, 1905.

The shear is capable of cutting beams up to 12 in., weighing 35 lb. to the yard; channels up to 12 in., weighing 20½ lb.; angles 5 x 3 in.; tees 5 x 3 in., and zees 10 x 3 in. The weight of the shear without the truck and motor is 5000 lb., the weight of the truck alone about 3000 lb., and the weight of the motor and starter about 400 lb., making the total weight nearly 8700 lb.




A Self-Propelling Johns Beam Shear with Contained Motor Drive, Built by Henry Pels & Co., New York.

## The Gary Land Company.

The Gary Land Company, a subsidiary company of the United States Steel Corporation, began the sale of lots in the city of Gary, Lake county, Ind., September 3. The company has published pamphlets in which the price of each lot and the terms and conditions of the sale are designated. These pamphlets can be obtained by application to the Gary Land Company, Gary, Ind.

All streets in the first subdivision have been graded and contracts have been made for paving. The two main streets, known as Broadway and Fifth avenue, respectively, will be provided with concrete sidewalks. A modern sewerage system has been designed by competent engineers and is now under construction. The cost of these improvements is included in the price of the lots, so that purchasers of lots will be subject to no expense therefor.

A company has been organized for the construction of modern water works, a gas plant and an electric light plant, and is now actively engaged in their construction.

The Gary Land Company has not attempted to make any profit out of the sale of lots, having fixed the price as low as the cost of the land and improvements will permit, the idea being to provide the most wholesome conditions of living for the employees of the Indiana Steel Company at a minimum cost.

Gary is located 25 miles east of Chicago, on Lake Michigan, and is served by the following railroads: Lake Shore & Michigan Southern, Pennsylvania, Baltimore & Ohio, Wabash, Michigan Central, Indiana Harbor, and Chicago, Lake Shore & Eastern. An electric street railroad is now under construction for the purpose of connecting Gary with Chicago, thus affording the best of transportation facilities.

## The Pennsylvania Steel Passenger Cars.

The favorable outcome of the tests upon the experimental all-steel passenger coach, recently built by the Pennsylvania Railroad Company at its Altoona shops, has led it to definitely announce that all future passenger equipment shall be made of steel. An influential factor in this decision was the necessity of providing noncollapsible fireproof cars for the New York tunnel. It is aimed now to make the passenger cars just as safe as possible in the light of the latest engineering accomplishments.

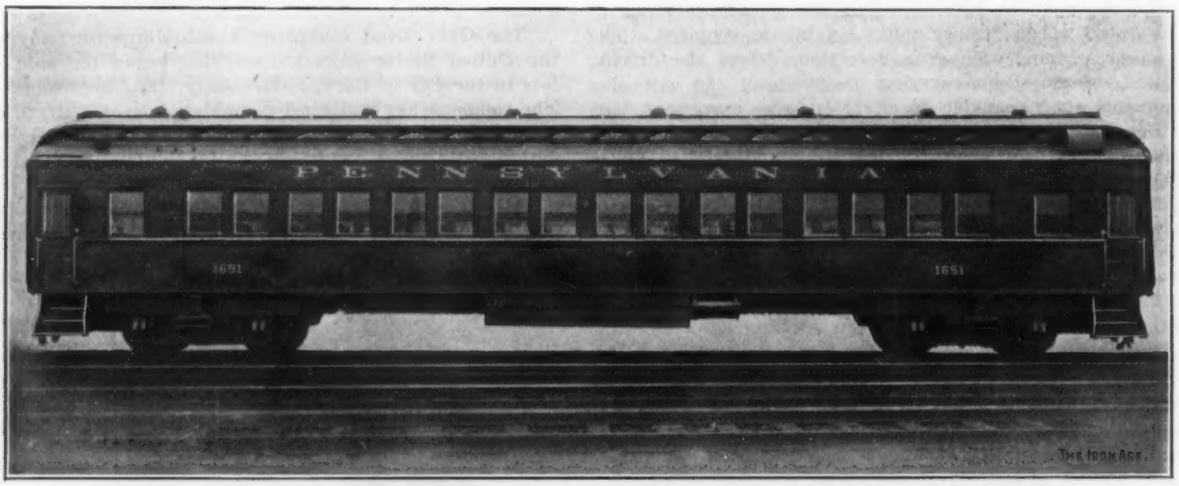



Fig. 1.—The Pennsylvania Railroad's First Steel Passenger Car.

Fig. 2.—Interior of the Pennsylvania Steel Passenger Car.

This first car, No. 1651, an exterior and interior view of which are given in the accompanying Figs. 1 and 2, is the first one of its kind in the world. Temporarily it has been placed on one of the company's local runs, and minute reports are being made as to its performance. The first cost of the all-steel cars will be somewhat greater than that of the older type, but it is believed that the extra expense will be justified.

The first requisition will be for about 1000 unburnable railroad cars, to be ready when the New York tunnel is completed. It will also call for some 500 Pullman cars, which will also be of completely noncombustible construction. The Pullman Company is now building the first all-steel sleeper ever constructed. It is to be remarked that these cars will be even more thoroughly noncombustible than those constructed for the New York subway.

The new car weighs 103,550 lb., as compared with 84,900 lb., the weight for the standard wooden coach, but the added weight very greatly reduces the vibration and hence adds to the comfort of the passengers. A part of the additional weight is due to the storage batteries and battery boxes which will be carried to light the cars by electricity, as no illuminating gas will be used in the New York tunnel. The electric wires will be thoroughly insulated in heavy metal conduits to add to the safety. It is possible, however, that the weight of the first car will be somewhat reduced, although it will always be heavier than the wooden coach. A small quantity of combustible material has been incorporated in this new No. 1651, and in the efforts to remove this absolutely it may be necessary to add weight in slight particulars.

The new car is absolutely noncollapsible. It could stand any load or any collision. Its hidden frame resembles a cantilever bridge, suspended on the trucks as piers. Safety against telescoping is secured by the use of enor-

mous steel girders, the principal feature in the body of the car being a central girder, 24 in. wide by 19 in. deep, extending the length of the coach, including the platforms. Four cantilevers on each side between the bolsters support the deep plate girder sides. The experience from collisions in the past shows that there is a tendency for the body of one car to rise above that of the next and for the underframe of the first car to sweep the superstructure of the second car off its underframe. This will be prevented in the new equipment by the extraordinary strength in the door and vestibule and posts, which are of very heavy rolled steel.

As an indication of the extent to which the fireproofing has been carried it may be mentioned that the flooring throughout the car and platform is of an imitation stone, spread while in a plastic state over the steel plates of the car. The framing above the windows is composed of steel plates. The doors are also steel plates, pressed into a shape imitating the wood door used in other cars and filled with cork to deaden the sound. The roof is of composite boards covered with copper sheathing. The inside lining consists of composite boards covered with fireproof paint.

In the experimental car the seats are of steel frame, covered with fireproof plush. The foot-rests are also of steel. For the present the arm rests are of wood, but experiments are now being made with various metals, in the effort to secure a noncombustible material which will not be cold to the touch, it being the policy of the railroad to eventually eliminate even the smallest amount of wood or other burnable materials in its cars. The principal dimensions of the car are as follows:

| | Ft. | In. |
|---|---|---|
| Length over buffers | 67 | 5¾ |
| Length inside | 57 | 10½ |
| Width at eaves | 10 | 1 |
| Hight to top of car | 14 | ½ |
| Hight to floor | 4 | 4 |
| Truck centers | 45 | 3 |
| Window centers | 2 | 11½ |

A new type of coupler has been adopted which, it is claimed, is stronger than anything ever used before, its principal aim being to avoid the possibility of breakage and the parting of trains. With respect to the temperature in the car due to the steel construction elaborate tests have been made, and it has been found that in hot weather the difference is very slight, and that the steel car shows a decided inclination to cool off more rapidly than the wooden coach.

## Standardization in British Engineering.

The work of the Engineering Standards Committee, which has been one of the most important developments in British engineering in the past five years, was discussed at length in a paper presented by Sir John Wolfe Barry at the recent York, England, meeting of the British Association for the Advancement of Science. From the original work which the committee undertook, the preparation of standards for iron and steel sections, its field has broadened until it now includes 30 different subjects, calling for the preparation of 75 different specifications and reports. The secretary of the committee visited the United States in the fall of 1904 and met with Committee A of the American Society for Testing Materials, this committee having in charge standard specifications for iron and steel. In reporting to the Engineering Standards Committee the results of this conference the secretary said that without doubt a closer co-operation with the American Society for Testing Materials would lead to a harmonizing of methods of testing and, where the practice permitted it, of specifications. The essential differences in practice, he added, would prevent any complete harmonizing of sections and specifications.

Since the organization of the British committee in 1901 it has created 12 sectional committees, and these have appointed 24 subcommittees. The expenses of the work have been borne by the five leading engineering societies in Great Britain, the Government and leading manufacturing and railroad companies. Referring to the results of the committee's work, Sir John Wolfe Barry enumerates the sizes of structural shapes decided on for each form of material, as below, which, it will be seen, constitute a larger number than American manufacturers roll. At leading mills in the United States but 17 sizes of beams are rolled, and the standard sizes of channels are limited to 10:

> The committee have laid down 16 sizes of equal angles, 30 of unequal angles, 20 of bulb angles, 6 of bulb tees, 7 of bulb plates, 8 of Z bars, 27 of channels, 30 of beams and 20 of tees. Besides the above there are, advancing by 5 lb. at a time, 9 sizes of bull-headed rails from 60 to 100 lb. per yard, 17 sizes of flat-bottomed rails from 20 to 100 lb. per yard, and 5 sizes of tramway rails from 90 to 110 lb. per yard, with their corresponding sections having a wider groove for use on curves.

The paper recognizes that standardization may not be pushed too far without impairing design or retarding progress in invention, though emphasis is laid on the statement that it is only in exceptional cases that for some particular form of angle or channel the expense entailed in cutting special rolls and the time lost in changing rolls are justified. The author continues:

> In the case of steel standard sizes are also very valuable to trade, as they avoid the necessity of cutting new rolls. They can be rolled to stock, thus obviating any interruption in process of manufacture or delay in delivery. As a practical illustration the testimony of a large steel maker in Scotland may be cited, who admits that since the introduction of standard sizes his firm has been able to break up some hundreds of tons of rolls, and by no means the least advantage gained is that in his works the process of manufacture is now no longer so constantly interrupted as it used to be, due to the frequent changing of the rolls to produce in smaller quantities the many special sizes asked for, without any corresponding advantage to the consumer.
>
> A further striking illustration of the advantages of standardization occurred in connection with the construction of the tramways of a large Midland city. An order for the rails—to be made in conformity with the British standard specification—was, in the first instance, placed with a Continental firm. From want of expedition and punctuality in making deliveries, and from failure to comply with the stipulated tests, &c., the corporation and their contractors were placed in a position of considerable difficulty by the constructional work being brought to a standstill. This caused them to approach a British firm, who, having the "standard" rolls already cut, undertook to make a delivery within a few days, with the result that the Continental order was cancelled and transferred to the British firm. Altogether orders have already been received for nearly 100,000 tons of these standard rails, probably representing a value of over half a million of money. Practically all the British firms of tramway rail makers are now equipped with sets of rolls for the standard sections and they are thus enabled to deliver such rails at very short notice, instead of the general experience heretofore of having to spend several weeks in the preparation of new rolls. This is not only a great advantage to the purchaser, but also a considerable saving in expenditure to the maker, as the cutting of a set of rolls usually costs about £200.
>
> With a view of introducing standardization in its most efficient and stable form the committee has decided to establish at the National Physical Laboratory at Bushy a series of gauges and templates to which all the templates throughout the country can be referred, and from time to time checked.

In the discussion on the paper Sir William Preece illustrated the money value of standardization by instances drawn from the manufacture of electrical plant in this country. Of the 472 electrical installations now running in this country only one-fifth are provided with standard types of motive or generating machinery, and the capital cost of the plant in the remaining 378 installations has been enormously increased by the multiplicity of types employed. Exception was taken by Sir William White to the inference carried by this statement. He could not agree that standardization was required in the electrical industry, believing this to be an instance in which too early standardization of plant and machinery would check legitimate invention and progress.

The National Association of Manufacturers, 170 Broadway, New York, has issued a volume of 227 pages, recounting the proceedings of the Eleventh Annual Convention, held in New York on May 14, 15 and 16, 1906. The volume gives a verbatim report of the proceedings, which at the time were necessarily condensed in the reports made by the press. In view of the variety of subjects considered by this convention, and the prominence in their various lines of business of those who took part in the discussion, this volume will undoubtedly be of much interest. It shows much more satisfactorily the scope of the association and the character of those who compose it than could be conveyed by any prospectus.

# The Cleaning of Blast Furnace Gas.*

BY F. E. JUNGE, NEW YORK.

### Elements of Cost to Be Considered.

Regardless of what are the commercial objects, the constructive principles, and the modes of action of a mechanical device, whether it be the transformation of kinetic fuel energy into some form of available power, or the conversion of raw materials into refined products, or the cleaning of matter to some standard of purity, the complete problem of adjusting the conditions, so far as physically possible, of any plant, machine, or apparatus that requires the expenditure of energy, material and space for the realization of maximum industrial economy, must take into account: (1) Cost of fuel to obtain the heat flux or heat generation along with other accompanying working expenses; (2) cost of bulk and weight of the apparatus; (3) cost of high stress, and (4), profitableness of high speed.

In view of the above requirements it is interesting to observe that in the course of development of gas cleaning plants the original bulky forms of apparatus, such as air cooling and water spraying towers, wet scrubbers, &c., have been replaced by mechanically operated high speed revolving fans and similar appliances, which, regarding first cost, floor space, water consumption and labor required, are immeasurably superior to the earlier forms. We shall later see what has been the effect, expressed in numeric values, on the cost of installation and operation. But before taking up the question of economy it may be well to discuss the various means which have hitherto been proposed for the execution of the process, and preceding this we shall have to make clear what we expect to perform with such means.

### The Temperature, Purity and Dryness of the Gas.

To secure maximum efficiency of combustion we must have a cool, clean and dry gas. But these requirements vary in degree according to the manner and kind of application. For use in hot blast stoves and under boilers the temperature of the gas may be higher than for use in gas engines. But higher temperatures enable the gas to contain a large amount of moisture, which is again harmful to the all round efficiency, as will later be shown. The degree of purity of the gas for heating furnaces need not necessarily be higher than 0.5 g. of dust per 1 c. m., or 0.2 grain per cubic foot, as it is found that the fire brick lining of the ovens is apt to fuse when still higher temperatures are maintained. For use in engines there are no lower limits fixed for temperature or purity, but the upper limits are the more rigidly drawn, viz.: Temperature, 25 degrees C. and degree of purity 0.02 g. per cubic meter or 0.001 grain per cubic foot. The latter figure is the basis on which German manufacturers give their guarantees on gas engines.

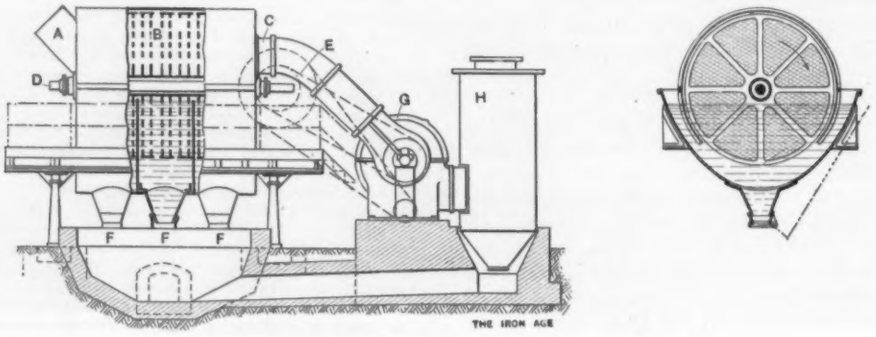



Fig. 1.—Elevation and Cross Section of the Bian Washer.

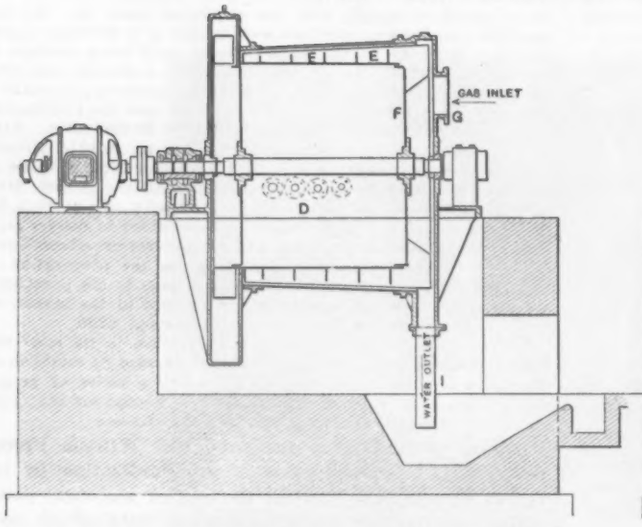



Fig. 2.—Longitudinal Section of the Theissen Washer.

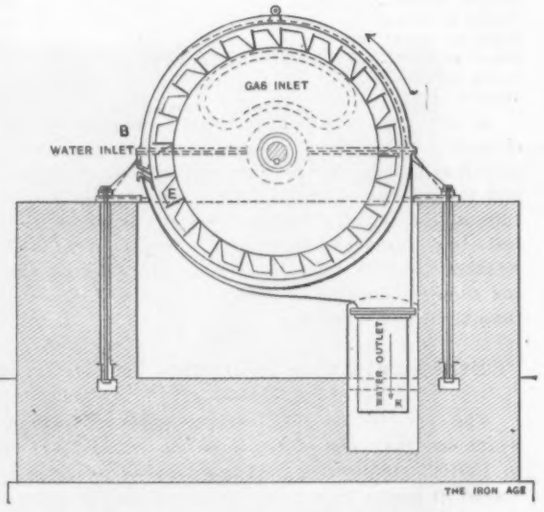



Fig. 3.—Cross Section of the Theissen Washer.

This covers the case as far as temperature and purity for various purposes are concerned.

The third requirement to be considered is freedom from excessive moisture. When the gas leaves the furnace (we are now speaking of blast furnace gas) it is laden with dust, containing 8 to 15 g. per cubic meter (4 to 7 grains per cubic foot) and other negligible impurities, and is very hot (140 to 180 degrees C.) but comparatively dry. The greater part of the dust is first removed by a dry process in the dust catcher, while the finer particles are eliminated by bringing the gas in intimate contact with water. Now this water, leaving aside its varying temperature, represents in all processes an almost constant amount compared to the quantity, temperature and composition of the gas and its dust contents, which all vary according to the course of the smelting process and the condition of the season. This water remains suspended in the gas after leaving the scrubbers, washers and fans, and to secure regular and efficient combustion it must be removed again down to a very low percentage before being conveyed to heaters and engines.

### Dry Gas a Logical Supplement to the Dry Air Blast.

I here wish to call particular attention to the fact that the same considerations which have led to the intro-

* Continued from issue of August 30, pages 542 to 545.

duction of the Gayley dry air blast process for furnace work commends even more emphatically the employment of dry gas for heating stoves, boilers, furnaces and engines. It is indeed an absolute necessity to burn and utilize the gas generated in blast furnaces as economically as possible, since otherwise the gain effected in the Gayley system by a reduction of coke consumption (and which naturally results also in a decreased output of furnace gas), is outweighed by the additional expenditure for steam and furnace coal, which must be supplied to the works in order to make up for the lesser quantity of gas produced, so that the same total amount of energy may be generated.

At the Isabella Furnaces it has been found that the saving of 400 lb. of coke per ton of iron in the furnace is offset by an expenditure of 400 lb. of coal which has to be burned under the boilers to furnish steam. If the price of coke is $3 per ton and that of coal $2, 400 lb. of coke will cost 54 cents and 400 lb. of coal 36 cents, making a difference of 18 cents per ton of iron. The cost of the dry air plant at the Isabella furnaces is 14 cents per ton, and 1 cu. ft. at 32 degrees not more than 2 grains. Therefore the cleaning of the gas from any of its constituents must be accompanied by a process of cooling, as the most perfect and controllable means of drying, regardless of whether the gas is to be used for heat or power purposes. The favorable effects of cooling on the density of the gas as well as on the capacity of the apparatus and the cost of installation have been discussed before. In the Gayley system the blast is cooled while under pressure from the blowing engines by the bosh water. In cleaning gas we have to cool its temperature by direct water injection in order to condense afterward the water vapor that is suspended, as will later be shown.

It is not merely the low calorific value of the gas or the presence of dust which renders the flame liable to be extinguished inside the relatively cool furnace tubes of the Lancashire boiler or the water tube interspaces of a Babcock & Wilcox boiler, but also the large percentage of moisture. One has tried to overcome this difficulty by burning the gas for steam raising inside a brick lined chamber separate from the boiler and inside of it. The

| | Hochdahl | | Schalke | Hörde | Hörde | Rombach |
|---|---|---|---|---|---|---|
| | I. Apparatus Hot uncleaned gas | II. Apparatus | | I. Apparatus Cool and cleaned gas | II. Apparatus | |
| Dust contents of gas before Theissen washer / after " " gr./cu.m. (grains per 1000 cu.ft) | 6 (2.6) / 0.04 (.017) | 6 (2.6) / 0.02 (.008) | 3-4 (1.3-1.7) / 0.004 (.008) | 2.5 (1.1) | 2.34 (1.0) / 0.01 (.004) | 2 (.87) / 0.02 (.008) |
| Water contents of gas before Theissen washer / after " " gr./cu.m. (grains per 1000 cu.ft) | 17.8 (7.8) / 7 (3.1) | 24 (10.4) / 5 (2.2) | 15 % Vol. / 12-20 % " | 32 (13.9) / 3.45 (1.5) | 36.21 (15.8) / 3.013 (1.3) | 42 (18.3) / 32 (13.9) |
| Temperature of the gas before Theissen washer / after " " deg.cent. | 144 / 30 | 158 / 37 | 144 / 30 | 46 / 33 | 45 / 28 | 43 / 36 |
| Volume of gas per hour (cu.ft.) cu.m. | 17,200 (607,160) | 12,000 (423,600) | 10,200 (360,060) | 12-15,000 (529,500) | 6,000 (211,800) | 9,000 (317,700) |
| Temperature of water before Theissen washer / after " " deg.cent. | 14 / 30 | 7 / 40 | 12 / 35 | 23 / 37 | 20 / 34 | 18 / 19 |
| Cooling water consumed per hour cu.m.(cu.ft.) | 18.9 (667) | 12 (424) | 10.2 (360) | 12-16 (565) | 7 (247) | 10.2 (360) |
| per 1 cu.m. gas liter (gal. per 1000 sq..ft.) | 1.1 (8.22) | 1.0 (7.48) | 1.0 (7.48) | 1.04-1.06 (7.78) | 1.15 (7.93) | 1.13 (8.45) |

THE IRON AGE

Fig. 4.—Table Showing Results Attained with Theissen Washers at Four German Blast Furnace Plants.

so that we have a saving of only 4 cents. So in order to do the same work with less gas and to avoid paying additional money for extra steam coal, and to simplify the operation of the plant by employing only one fuel, one working medium, and the most economical type of prime mover, it is necessary to burn the available blast furnace gas more efficiently than we do now. The more perfect combustion will reduce gas consumption and liberate for use in other departments a considerable percentage of gas, hitherto wasted. The employment of dry gas is a logical and essential supplement to the dry air blast process, in order that its commercial benefits may be fully secured.

### Cleaning Gas Must Be Accompanied by a Cooling Process.

Gas containing a super normal amount of moisture cannot give high combustion efficiency on account of the deleterious effect of the water globules on the rapidity of flame propagation, and, further, because of the lower calorific value of the gas per unit volume, of which at high temperatures a considerable part is occupied by the water vapor, and because of the latent heat which is absorbed for heating such water.

It is a well-known phenomenon that 1 c. m. of gas at 29 degrees C. cannot contain more than 29 g. of water vapor, while at 150 degrees C. it can theoretically contain 2590 g., or, speaking in English units, 1 cu. ft. of space at 70 degrees cannot contain more than 8 grains of water vapor 1 cu. ft. at 50 degrees not more than 4 grains, brickwork then becomes heated to redness and maintains the temperature of combustion desirable for radiating purposes, but this does not entirely eliminate the thermal inefficiency. The same trouble is experienced in heating blast stoves when the gas leaving the water is not subjected to a thorough process of drying, or else is sufficiently cooled before entering the washer. Nor is it desirable to employ in gas engines gas that is saturated with water vapor. Its calorific value is so low that there is no fear of premature ignition, even when high compression is used. The injection of water into the combustion chamber of gas engines has, in the course of practical development, proved to be an entry at the wrong end of the balance sheet, and it is only when quantity and time of injection are very accurately adjusted to conditions which cannot here be dealt with in detail that the presence of water during compression is of thermal benefit.

### The Apparatus for Dry Cleaning.

Coming to the discussion of the apparatus for dry cleaning, of the entire aparatus employed in actual practice the dry dust catcher is all important. Its purpose is to effect a preliminary and rough cleaning of the total mass of gas generated. This is unavoidable regardless of whether scrubbers or slowly rotating washers or high speed centrifugal washers are employed in the latter part of the process. Its action is that of a combined holder and deflector, being based on the principle of suddenly arresting the motion of a rapidly flowing mass of gas,

either by placing plates or other obstacles in the path of travel, so that the gas impinges against their surface, or by changing the direction of flow repeatedly, by arranging consecutive compartments through which the gas is to pass, or finally providing for large spaces where the speed of flow is greatly reduced, thus allowing the dust to settle by gravity. All these means and actions must be combined to absorb the main portion of solid matter which is carried in suspension in the early part of the process.

The employment of corrugated vertical plates along which the gas is made is made to pass in thin layers with gradually decreasing speed, and in spiral curves can be recommended as giving highest efficiency. A cone-shaped bottom discharge, built as a hopper, with cleaning door or valves, must be provided to allow of the removal of dust by manual labor at certain intervals. These discharging devices have to be so designed as to exclude all danger of air entering the dust catcher and pipes or of gas leaking out into the atmosphere, which would disturb the even flow of gas to the main and its composition and might lead to serious explosions; therefore the cleaning doors ought to be arranged so as always to close by automatic action, and they must be conveniently located so as to discharge directly into the dust cart. The dry dust catchers are an indispensable and very economical apparatus, as they consume no water, which in some locations is a very serious factor to contend with, no motive power nor practically any floor space, nor is there any appreciable wear. The gas must be taken from several, preferably three, symmetrically distributed points of the furnace top, the discharge pipes combining in one common downcomer, which leads to the dry dust catcher. For a 100-ton furnace the first cost of a dry dust catcher is about $5000.

While to this first part of the process the whole volume of gas generated must be invariably subjected, its further treatment depends entirely on the use which the particular part of the gas is intended to be put to, and such use, together with the characteristics of the ore, will determine the extent of cleaning and the degree of purity.

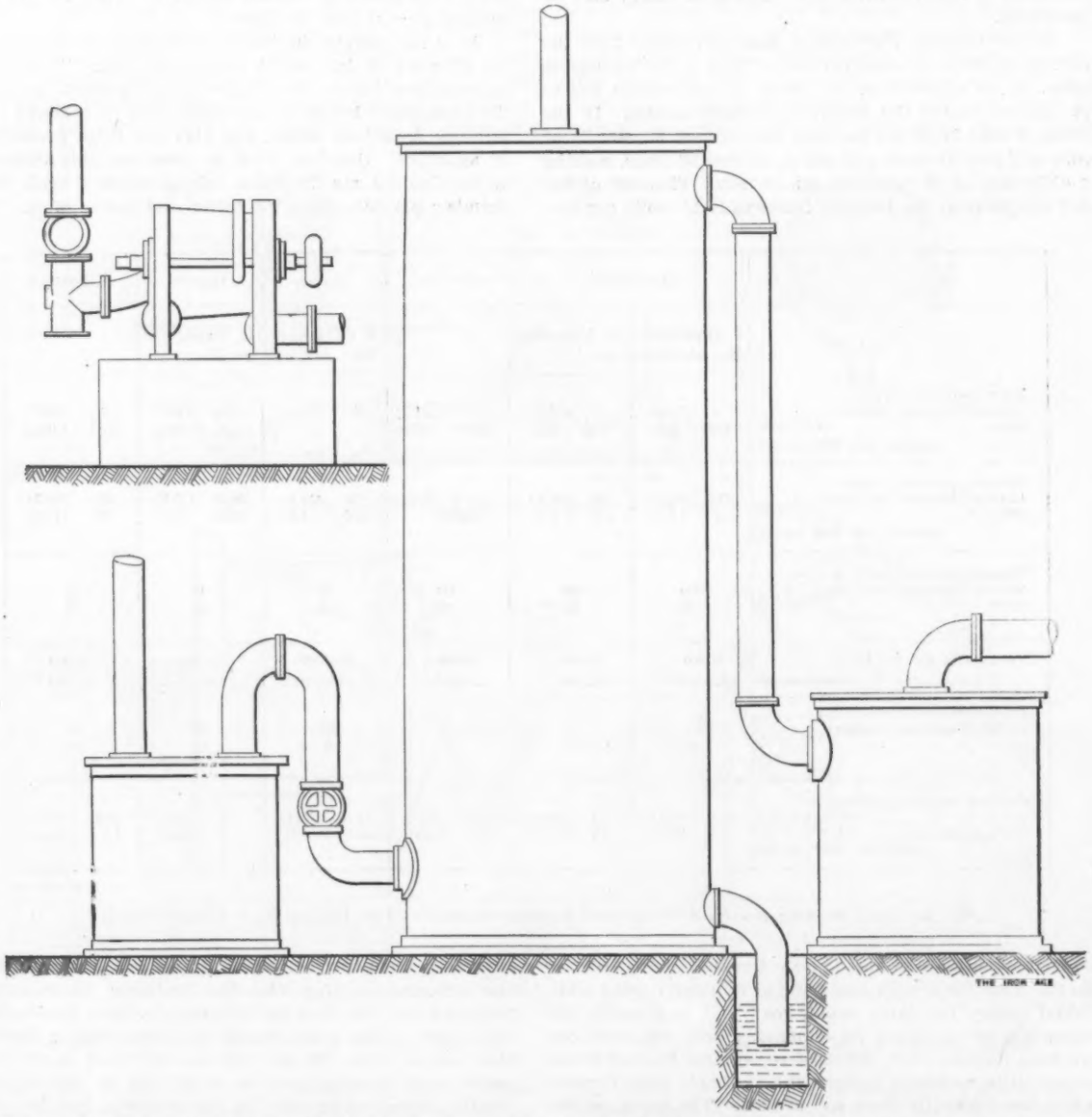


Fig. 5.—These Two Sectional Drawings, Both Drawn on the Same Scale, Show a Comparison of Bulk and Floor Space Between an Old Scrubber Plant and a Modern Centrifugal Gas Washer, both Cleaning the Same Volume of Gas to the Same Degree of Purity.

### Some Considerations Regarding Wet Cleaning.

It has previously been stated that the principle of wet cleaning consists in bringing the gas in intimate contact with water vapor, so that the solid particles of dust are separated from the purely gaseous molecules, which proceed by centrifugal or other action to the discharge main, while the substantial particles of the dust are carried away by the cooling water, which, by some process of filtration, may be cleaned and used over again to reduce consumption.

The earlier forms of water spraying towers, as were shown in the Lackawanna plant, and which are still in use in some older plants on the Continent, do not come up to modern requirements. They are too bulky, consume much floor space and too much water, and to

effect a sufficient cleaning several of them have to be arranged in series, or the gas must be passed in addition through several wet coke scrubbers after coming from the spraying towers. One or more fans are necessary to draw the gas through all of this apparatus, and afterward throw out the surplus water particles by centrifugal action. The number of towers, scrubbers and fans required and the quantity of water consumed, and therefore also the first cost, depend upon the quality of the ore and the degree of purity of gas desired. With a decreasing value of ores, which in the lake districts has fallen several points in recent years, the factor of cleaning becomes of course more and more important.

### The Cost of a Cleaning Plant.

Basing our figures on 1000 cu. ft. as the unit capacity of a gas cleaning plant, it is found that the average cost of such plant, including dry scrubbers per 1000 c. m., is $916, if the gas is brought to a sufficient degree of purity for heating blast stoves, and $1370 when it is used in gas engines, or $26 and $39, respectively, per 1000 cu. ft. Not included in this price are pipe connections, clearing ponds, water pumps, gas holders and similar accessories. The average mechanical power required for moving the gas and pumping the cooling water is 5.2 hp. per 1000 c. m. of stove gas (0.15 hp. per 1000 c. ft.), and 9.7 hp. per 1000 c. m. of power gas (0.27 hp. per 1000 c. ft. The consumption of cooling water per 1000 c. m. of gas per hour is 4 c. m. for furnace gas, and 6.2 c. m. for engine gas, 31.2 and 46.4 gal. per 1000 c. ft., the temperature of the water varying from 5 to 35 degrees C., according to the season. The cost of operation per annum for plants in use 365 days in the year and 24 hours daily, figuring on the horsepower as costing ¼ cent, leaving out the value of the blast furnace gas and neglecting amortization, but including regular attendance, oil consumption, repairs and unkeep, in German practice, comes out as 5.76 pfennig per 1000 c. m., or 0.04 cent per 1000 cu. ft. for heating gas, 10.68 pfennig per 1000 c. m., or 0.072 cent per cubic foot for power gas.

Besides this there is an additional expense for occasional cleaning, as the wet scrubbers have to be cleaned every 10 or 14 days, requiring four men to work for four hours. Likewise the coke scrubbers, to be efficient, must be looked after once a month, cleaned and sometimes filled with fresh coke, requiring four men to work for six hours. This additional expense approximates $20 per year 1000 c. m. (35,317 cu. ft.).

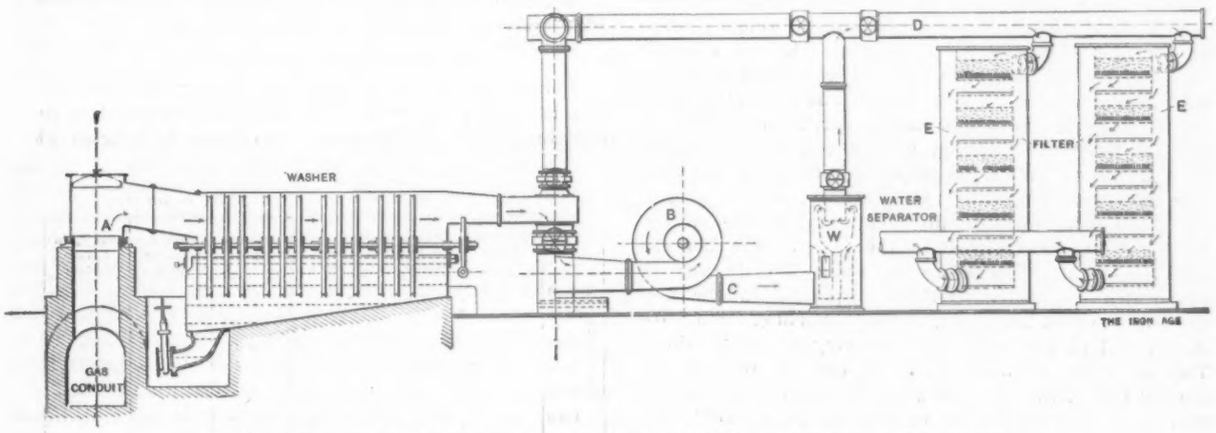



Fig. 6.—A Bian Washer Plant, Having a Capacity of 20,000 c. m. (706,000 c. ft.) Per Hour.

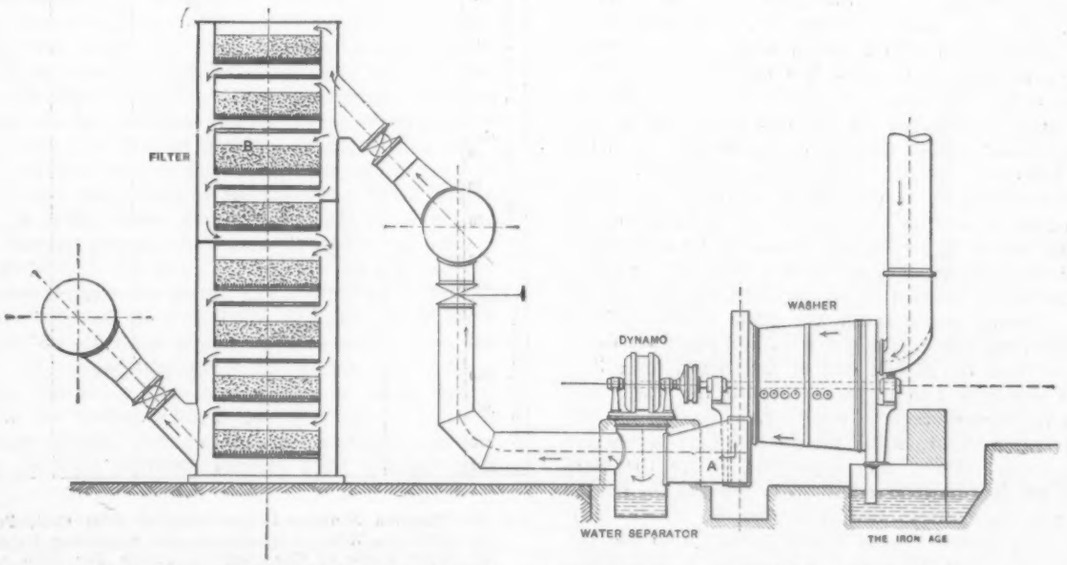



Fig. 7.—A Theissen Washer Plant, Having a Capacity of 24,000 c. m. (847,200 c. ft.) Per Hour.

The above figures are taken from a number of the older Continental gas cleaning plants in iron works, no data being available in this country; they would probably come out somewhat differently on this side of the Atlantic on account of the different cost of material and skilled labor.

### Rapid Improvements in Cleaning Plants.

The history of modern industry is made in years, while decades were needed up to 50 years ago to mark a decided forward step in evolution. So this type of cleaning plant can even now be reckoned as belonging to the past and having only historical value. The tendency of all branches of modern industry is characterized by the employment of high speed, high pressure and high efficiency, these features being made possible by the development of high grade materials and accompanied by a reduction of bulk, weight, first cost and labor charges; this we can readily see by comparing the results attained with rotary and centrifugal gas washing apparatus to those of the stationary type, previously described. To cover the subject fully, however, we must first undertake the somewhat dry task of studying the

constructive principles and the workings of the various types of rotary washers.

**The Bian Slowly Rotating Washer.**

Of the several forms of rotary gas cleaning apparatus we may distinguish between two different types the slowly rotating and the high speed centrifugal washer. The first form must be credited to Emil Bian, director of the iron works of Dommeldingen, Germany. The Bian washer was exhibited at the Liége Exposition and the accompanying Fig. 1 shows an elevation and cross section. The apparatus consists of a horizontal, stationary sheet metal cylinder B, 126 in. in diameter and 118 to 200 in. long and having closed heads, through which the gas enters from A and leaves through C. The bottom of the cylinder is open and rests its entire length in a water filled trough, so that the water fills the cylindrical space almost up to its axis. The horizontal shaft D, mounted in the drum casing, carries a number of vertical iron disks covered with a rough wire netting of ⅜-in. mesh. When the shaft is rotated by the electric motor or transmitter E, as shown on the sketch, the disks move upward, lifting up that portion of the netting which was dipped in the water. The hot gas entering at a temperature of some 185 degrees C. evaporates the water particles suspended in the network of the first few disks, thereby enriching itself with steam, and at the same time lowering its temperature. This reduction of temperature of the gas will be the greater the further the gas proceeds toward the middle portion of the apparatus, by its always meeting new water drops and veils suspended between the meshes, so that finally its temperature is no longer sufficient to evaporate the water. At this point the process is reversed, the cold water globules of the network effecting a condensation of the steam which was generated in the first part, and which has absorbed the greater portion of the suspended dust particles, so that now the heavy solid constituents are through condensation separated from the lighter gaseous molecules and fall down in the form of drops to the bottom of the trough.

Sluice valves, F, at the bottom of the drum casing, allow of the removal of the mud at certain intervals. An automatic spraying device, not shown in the drawing, is used to clean the network of the disk from dirt so far as the latter is not washed off on the disks dipping into the water. Cooling water enters the drum continuously in a direction opposite to the gas flow, and partition walls, arranged from the bottom half of the casing, force it to proceed regularly and in stages toward the other side, so that the coolest water is used for condensing the suspended water vapor, while the hottest part serves for raising steam. From this apparatus, where the main portion of the dust is eliminated, the gas is sucked through a centrifugal hydraulic fan G, where it is still further cleaned, to be finally pressed into the dry scrubber H, where the excess of moisture is removed.

Besides eliminating the dust, the Bian washer also absorbs the carbon dioxide into steam which is contained in varying quantities in the blast furnace gas, so that the composition of the gas is also improved. A dust content of 10 or 12 g. per cubic meter can be reduced to 0.5 g. per cubic meter, or 0.22 grain per cu. ft., while the temperature of the gas is lowered almost to that of the cooling water (30 degrees C.). Of course, there is a corresponding reduction of volume effected. The consumption of cooling water in a combined plant of this type, when the gases are not hotter than 100 degrees C., amounts to 1 litre per cubic meter, or 7.5 gal. per 1000 cu. ft., and for the fan, 0.5 to 1 litre per cubic meter, or 3.7 to 7.4 gal. per 1000 cu. ft. The total consumption is, therefore, not higher than 2 liters per cubic meter, or 15 gal. per 1000 cu. ft. For gases over 100 degrees C. the amount of water consumed is 2 liters per cubic meter for the washer, and 1 litre per cubic meter for the fan (7.5 and 15 gal. per 1000 cu. ft. respectively). The power required for driving both washer and fan is about 45 hp. for a blast furnace plant of 100 tons daily capacity. The speed of rotation of the washer shaft depends upon the temperature of the gas and of the cooling water, and averages 10 to 12 rev. per min.

The first cost of the combined cleaning plant, including fan and motor, is $8350. The cost of attendance and upkeep, as well as the floor space, is also small, the construction of the apparatus being very simple. The dirt must be drained once in 24 hr. from the bottom of the trough.

Unfortunately the Bian washer in the combination described does not clean the gas sufficiently for use in gas engines, so that additional scrubbers or fans have to be added. But for use in blast stoves, under boilers and in furnaces, the degree of purity of the gas is sufficient. There are a few other makes, such as the Salien washer in England, which show the principal features of the Bian and need not here be further discussed.

**The Centrifugal Fan Washer.**

Coming to the centrifugal fan washer, its construction is so well known that no drawings are required to explain the working process. The water is injected in

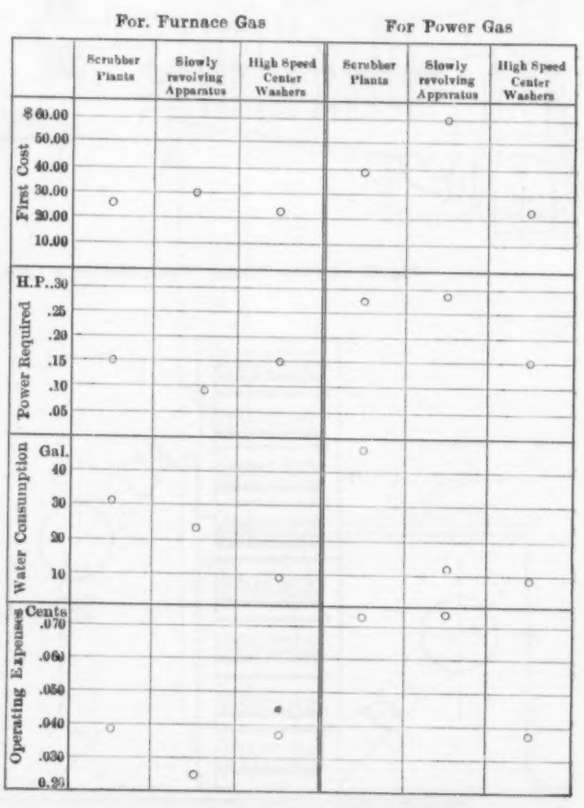



Fig. 8.—Diagram Showing Comparisons of First Cost, Power Requirement, Water Consumption and Operating Expenses of Three Types of Gas Cleaning Plants Per 1000 c. ft. Capacity.

finely atomized rays at some convenient point of the intake, being there mixed with the hot gases and partly evaporized to steam. Through the action of the fan blades it is rapidly whirled round and finally thrown toward the walls of the spiral casing. Obviously the centrifugal fan was designed for moving gas under low pressures, at low cost, and against low resistances, at the minimum expenditure of power, but with no intention of combining with this action that of the washer. Therefore no high efficiency of cleaning in these hydraulic fans can be expected. As was said before, the separation of the solid dust particles from the gaseous molecules does not take place inside the periphery of the fan blades, but on the water covered inner surface of the fan casing. The inner space between the blades simply serves for the preliminary admixing of water vapor and dust.

As the eccentric position of the blades in the casing is harmful to the efficiency of the cleaning process proper, which is characterized by the enforced frictional contact between gas and water on the inner fan casing, to secure such a degree of purity of the gas as is necessary for gas engines at least three fans have to be ar-

ranged in series. In the first fan the water spray will be transformed to steam through the hot gases, while the two others will condense the steam and so have a similar effect as was explained in the Bian washer. Of course, fresh water has to be injected into each of the three fans and the consumption is very high. This fact, together with the important point that hydraulic fans use very much more power for handling the same volume of gas than do ordinary dry fans, justifies the conclusion that it is uneconomical to employ this type of apparatus in its present form in a gas cleaning plant. It may, however, be used in addition to washers specially designed for the purpose, to draw the gas through the water and also as means for drying the gas by separating through centrifugal action the heavy water particles from the lighter gaseous molecules.

**The Theissen Washer.**

A third form of washer, and one that must be regarded as the most efficient of all constructions discussed, is the Theissen washer. Since the constructive details of this washer were described in *The Iron Age** some time ago, it is sufficient to here give a brief discussion of its working process. The principal feature is a forced contact between the gas and spraying water, driven against a cylindrical envelope by fan blades set at oblique angles to the axis of rotation, the number of revolutions of the drum being 850 per min.

Figs. 2 and 3 show a longitudinal and cross section. Gas enters at G and passes out at the lower side of the opposite end at K, flowing in an opposite direction to the water, which enters through the openings B in the side and discharges through I. The electric motor at the left gives motion to the drum F, carrying the small veins E; this forces the water to form a film flowing from left to right, through which the gas must pass in an opposite direction. The hot gas vaporizes some of the water on first contact and at the same time gives up the larger and heavier particles of dust. The vapor formed moistens the fine dust remaining in the gas and makes it more easily take up the the water at its further outlet. A wire screen covers the inner wall of the casing, thereby causing the water to bubble and offer a larger surface to the gas. Obliviously the efficiency of the process will be the better the greater the frictional difference between the respective gas and water films, the longer the duration of the enforced contact and the greater the temperature difference of the two media; therefore the gas can be led from the dry dust catcher directly to the washer without previous cooling, its heat being thus utilized for vaporizing the water and for wetting the dust particles through their mixture with steam.

The temperature reduction of the gas in this apparatus is remarkably high, ranging from 144 degrees to 30 degrees C., though the heat absorption effected by the cooling water is comparatively small, its temperature being 40 degrees C. before and 39 degrees after the washer and a quantity of 1.1 liter being consumed per cubic meter of gas (9 gal. per 1000 cu. ft.). The washing water is fed from elevated tanks, runs through the apparatus and is discharged into clearing ponds. There the dust is allowed to settle and the water is elevated through air cooled radiators back to the tanks by means of pumps. The actual consumption of fresh water can therefore be reduced to a minimum. The apparatus is, of course, self cleaning. Fig. 4 gives the numeric results which have been obtained with Theissen washers in four German iron smelting plants in the course of several years' operation. The table is self explanatory. Fig. 5 shows the reduction of bulk and floor space of cleaning plant effected by the adoption of modern high speed centrifugal washers against scrubber plants formerly employed. Both forms of apparatus are drawn at the same scale for a capacity of 80 hp. in gas engines. The total cost of operation, including power required and water consumed, of the Theissen washer amounts to about 30 per cent. of the cost of the hydraulic washers discussed before. The purity of the blast furnace gas thus obtained is equal to that of atmospheric air in the respective iron smelting plants.

* August 18, 1904.

**Figures from German Practice.**

In conclusion, I give the results recorded by Meyes Zweibruecken in an address delivered in November, 1905, at Saarbruecken, Germany. I select the data having special reference to the operation of plants working with Bian and Theissen washers, which are the only type deserving consideration in modern practice. Fig. 6 shows a cleaning plant of a capacity of 20,000 c. m. per hour (706,000 cu. ft.), of which 18,000 c. m. are used in hot blast stoves and under boilers and 2000 in gas engines. The gas when leaving the blast furnace has a dust content of 8 to 12 gr. per c. m. (3.5 to 5.2 gr. per cubic foot). It first passes through two dust catchers and enters at A in the Bian washer at a temperature of 740 degrees C., where it is cooled down to from 40 to 30 degrees C., depending upon the temperature of the cooling water. A degree of purity of 2.5 g. per cubic meter (1.1 gr. per cubic foot) is reached. The gas is sucked through the washer by means of fan B and afterward pressed through a water separator W, whence it separates into two streams, the one going through pipes C to the blast stoves, the other through D to filters E, which are filled with slag wool and effect a further drying and cleaning down to 0.02 and 0.01 gr. per cubic meter (0.01 to 0.005 gr. per cu. ft.). The plant costs $12,000 without and $21,000 with dry scrubbers, while for furnace gas the price for a plant of this capacity would only be $41,070 in Germany. Thus it is seen that with this type the removal of the last trace of dust contained in the gas adds largely to the expense of cleaning. The above cleaning plant has been in successful operation for the last two years. The water consumption amounts to about 3 liters per 1 c. m. cleaning gas (22 gal. per 1000 cu. ft.). The power requirement is from 70 to 60 hp. for power gas or 20 hp. for stove heating gas. Basing the figures on 1000 c. m. as the unit capacity of the gas cleaning plant, the initial cost of the plant is $1050 and $2080 respectively for the different uses of heat and power. The operating cost is 0.83 to 0.93 cents, or 2.6 cents respectively per 1000 c. m. Based on 1000 cu. ft. as a unit the corresponding items are first cost, $30 and $60, and operating expenses 0.023 to 0.026 cent and 0.073 cent respectively.

Fig. 7 shows a plant equipped with Theissen washer. The gas coming from the dust catcher only contains from 1 to 1.5 gr. of dust per cubic meter (0.43 to 0.69 grain per cu. ft.) and has a temperature of 40 degrees C. It goes directly to the washer, leaving at A and containing only 0.03 grain of dust (0.013 gr. per cubic foot). In the dry filter B it is further cooled to 25 degrees C., and when entering the gas engine possesses a degree of purity which is guaranteed, namely, 0.02 gr. per c. m., or 0.01 gr. per cubic foot. There are two Theissen washers, each handling 24,000 c. m. per hour, or together, 48,000 c. m. (1,694,400 cu. ft.).

One washer delivers gas to four gas engines, of 4800 hp. combined capacity. It consumes 15 c. m. (530 cu. ft. of water per hour, and requires about 100 hp., that is 2 per cent. of the engine output, as motive power, which is indeed an excellent performance. The plant was put in active service early in 1903 and has been running without interruption ever since, giving complete satisfaction. The cost of this plant is $33,300, or based on 1000 c. m. as a unit the first cost is $830 and the operating cost 1.3 cents per hour. For 1000 cu. ft. the corresponding items are, first cost $23 and operating expenses 0.037 cents. The various items for the three different gas cleaning systems, namely, scrubber plants, slowly revolving apparatus, and high speed centrifugal washers, having been based on the same unit of 1000 cu. ft. plant capacity, and on the same general conditions of operation, a comparison can now be made which is graphically represented in the table Fig. 8, showing first cost, power requirements, water consumption and operating expenses.

The comparison is based on the assumption that 1 hp. costs ¼ cent, leaving out the value of the blast furnace gas, and neglecting amortization, but including regular

attendance, lubrication, repairs and upkeep. These tables teach us that all factors which determine the industrial economy of gas cleaning plants are in favor of the adoption of high speed centrifugal apparatus. Besides the greatest advantage, namely, the reduction of floor space and bulk, it is seen that also the first cost, the power required, the water consumption and the other operating expenses of modern cleaning plants are greatly reduced against what obtains in plants of the type of the Lackawanna, the rate of reduction of the various items being 50, 40, 82 and 50 per cent., respectively. Regarding the relative values of the slowly revolving and high speed washers, it seems that while the former have some merit for cleaning the whole mass of gas for furnace heating the latter must invariably be adopted when the gas is to be used in gas engines. It is better for reasons of simplicity and all round economy only to employ besides the unavoidable dry dust catcher one system, and the most efficient, in a plant, and to subject the whole mass of gas to a thorough cleaning process, regardless of whether it is to be used for heat or power purposes. If it should be found sufficient that for the first named application the dust contents may be higher, say 0.1 g. per cubic meter, or 0.043 gr. per cubic foot, then the initial cost and power requirement of a high speed centrifugal set will of course be even lower than the values recorded above.

In conclusion I want to again emphasize the necessity that in addition to thorough cleaning from dust it is absolutely essential to free the gas from excessive moisture, by either cooling it or throwing the water particles out by centrifugal action, or by passing the gas through efficient dry sawdust scrubbers and filters. If to the changing temperature, composition and calorific value of blast furnace gas and to its other fluctuating properties, we add a constant quantity of water, as is done in all the apparatus described, the uniformity of the combustion process is certainly more endangered, and the only safeguard against the irregular and inefficient working consists in reducing the amount of moisture to a minimum.

(*Concluded.*)

## Customs Cases Before the Courts.

With the reopening of the United States courts this month, it is expected that many customs cases involving the classification of metal imports will be brought to trial and determined, thus paving the way for the final settlement of some issues and the advancement of others one step nearer the tribunal of last resort. Several of the issues now pending on the calendars of the various courts have been tried over and over again, much to the annoyance of importers, who have been kept in a state of uncertainty for several years.

### Molders' Patterns.

One of the most interesting cases to be argued stands in the name of R. Hoe & Co., New York, and involves an issue of much importance to manufacturers and organized labor. The Treasury Department, which is backed up by the Pattern Makers' Union, insists that molders' patterns are dutiable as manufactures of metal at the rate of 45 per cent. The importers, however, claim that the patterns are entitled to free entry as patterns for machinery. This latter contention the Circuit Court of Appeals upheld some months ago, whereupon the Government applied for a writ of certiorari in order to bring the issue before the Supreme Court.

### Nickel Plated Zinc Sheets.

Another case which, when finally decided, will act as a precedent for future importations, stands in the name of the City Button Works, New York. The issue in this case is whether nickel plated zinc sheets are dutiable as manufactures of metal at 45 per cent., or should be classified under paragraph 192, as zinc in sheets. The Board of General Appraisers and the Circuit Court took the position that the merchandise was properly assessed under the metal schedule of the tariff law.

### Hematite Ore.

Although defeated before the Board of Appraisers, the Government intends to make a strong fight in the Circuit Court for the Eastern District of Pennsylvania, regarding the classification of hematite ore, also known as red oxide of iron. The lower customs tribunal held that the article was dutiable as iron ore, whereas the Treasury Department is of the opinion that it should be taxed as a crude color, or pigment. The importers in this case are Francklyn & Ferguson, New York.

### Metal Alloys.

The William Cramp & Sons Ship & Engine Building Company, Philadelphia, is not satisfied with a decision made by the Board of Appraisers last spring, and will contest in the Circuit Court the classification of so-called alloys composed of manganese, iron and tin and of copper and tin. The merchandise was classified in part under paragraph 172 relating to alloy composed in chief value of aluminum, and in part under paragraph 193 as articles composed of metal not specially provided for. While the Board of Appraisers failed to uphold the return made by the Collector, it made a decision unsatisfactory to the importers. According to the board, the merchandise is dutiable as unwrought metals and metallic mineral substances. In the Circuit Court the Cramp Company will maintain that the alloys are dutiable under paragraph 122 either directly or by similitude as ferromanganese or ferrosilicon.

### Sheet Steel in Strips.

The United States will ask the Circuit Court for the Southern District of New York to consider for the second time the dutiable classification of sheet steel in strips, which it is claimed by the Government is sufficiently polished to be dutiable at an additional duty of 1 cent per pound. This question has been threshed over both by the General appraisers and the courts, but the Secretary of the Treasury, undaunted by past defeats, proposes to keep the issue before the courts for some time.

### Forgings.

Another case of interest to importers, to be heard by the Circuit Court at New York, involves the definition of the term forgings, as used in the tariff act. Thomas Prosser & Son, New York, contend that certain steel articles found by the Board of Appraisers to have been forged and subsequently finished, or nearly finished, in the machine shop, and consequently dutiable as manufactures of steel, should have been allowed to enter as forgings, or else as steel in all forms and shapes not specially provided for. A unique point of law is made in this case. It appears one subboard of General Appraisers had previously acquired jurisdiction in the case, given a hearing and reached a conclusion favorable to the importers, when another board stepped in and, assuming jurisdiction, decided the issue against the importers.

### Other Issues

of general interest, with the names of the importers, to be heard in the Federal courts this fall are as follows: Frank H. Shallus, tin disks; The Burditt & Williams Company; Harrison Supply Company and others, iron sand; H. Boker & Co., plated iron sheets and sheet steel in strips; C. Newman Wire Company, draw plates and wortles; G. W. Sheldon & Co., old chains; Joseph F. McCoy Company, polished steel; A. & H. Veith, steel stampings; S. Knauth and Nachod & Kuhne, long steel tubes; Hermann Boker & Co., nickel anodes; George Nash & Co., screw rods; Liquid Carbonic Company, short steel tubes; C. B. Richard & Co., bronze statuary; R. D. Wood & Co., steel floor plate; Hempstead & Son, magnetic firebrick.

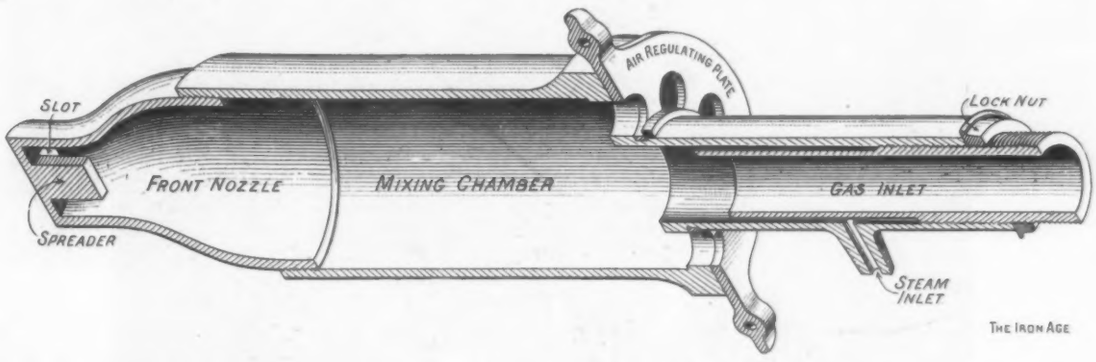
### Duty on Acetate or Subacetate of Copper.

The Board of United States General Appraisers overruled on August 31 a protest filed by C. Bischoff & Co., New York, regarding the classification of merchandise assessed by the customs authorities as acetate of copper. The merchandise was taxed at the rate of 25 per cent. as a chemical salt, whereas the importer maintained that free entry should have been granted under the provision in the free list of the tariff for subacetate of copper. The board says that the importers failed to produce sufficient evidence to overcome the presumption of the correctness of assessment made by the collector.

## The Branch Natural Gas Burner.

For burning natural gas under horizontal tubular and water tube boilers the National Equipment Company, St. Louis, Mo., is putting out the Branch natural gas burner herewith illustrated. The gas is admitted to the burner through a 2-in. inlet pipe and passes into a mixing chamber where the necessary amount of air and steam mingles with the gas before it is discharged through the front nozzle. This nozzle has slots so that the flame produced is of a fan shape and spreads out under the boiler. Several advantages are claimed for the burner, principal among them being that it is easy to regulate accurately the ratio of the air and steam to the gas so as to product perfect combustion and a uniform flame near the front end of the boiler. The jacket of steam which is provided around the gas intake pipe serves as a preheater for the gas before it enters the mixing chamber and promotes the combustion.

The construction of the burner is such that gas under any pressure may be used, it being only necessary to change the front nozzle, which is threaded to the mixing chamber of the burner, and different sized openings in this nozzle are supplied for different gas pressures. It is claimed that the burner may be forced to 100 per cent. overload when desired without any change. All parts of the burner are of cast iron and are interchangeable.




The Branch Natural Gas Burner, Made by the National Equipment Company, St. Louis, Mo.

## Electrolytically Dissolving Iron Oxide Scale.

Many methods, all founded upon the same principle, have been tried for removing the oxide scale from iron rods, wires and sheets by means of electricity, the object being to do away with the ordinary pickling bath. All of these attempts have been made with a bath after the pattern of the common electro plating bath, through which has been passed a current of proper strength. In some the metal to be cleaned has been made the anode in an acid electrolyte; this dissolves the scale more rapidly than the usual pickle, but the action is irregular and there is the danger of the acid pitting the iron. This has not proved to be an economical process, since the time gained is more than offset by the cost of the current necessary. Other methods have made the metal the cathode in an electrolyte that is neutral, or very weakly acid or alkaline. This also possesses disadvantages, as the removal is slow and irregular; in addition, the work is not thoroughly done and portions of scale are left on different parts of the plate. Some of the scale is also loosened by the hydrogen gas generated and sinks to the bottom of the tank. Another trouble with this method is that much of the oxide is reduced to metallic iron, thereby causing a roughening of the surface.

According to the claims made by Charles J. Reed of Philadelphia, in patents just issued, all of these drawbacks are overcome by the method devised by him, in which the iron is made the cathode in a weak acid electrolyte. It is claimed that all the scale is rapidly dissolved without reducing any of the metallic iron. The electrolyte is made of a sulphuric acid solution having a specific gravity of 1.20 degrees, which is equivalent to an acid percentage of 27.1; good results have also been obtained with solutions between 1.15 and 1.25 degrees. When the acid percentage is below 9 the action is too slow and irregular to be of commercial value. The anode is of lead and the current may vary from 40 to 70 amperes per square foot of iron surface. It has been found that the scale is removed more rapidly, completely and economically when the temperature of the electrolyte is raised to about 110 F. At higher temperatures than this there is a tendency of the acid to dissolve the metal and greater current density is required to prevent this.

It is stated that under favorable conditions the heavy scale on rolled iron rods has been thoroughly removed in two to three minutes. The scale does not disappear, because the oxide is reduced to metallic iron; it has been found that the oxide is simply reduced to a lower state of oxidation and then electrolytically dissolved. The process yields oxygen at the anode and sulphate of iron at the cathode. When the electrolyte has become nearly saturated with sulphate of iron solution it is removed to a shallow pan and allowed to cool. It is preferably brought to a temperature of about zero, when the sulphate of iron crystallizes out. When it is intended to reclaim the sulphate sulphur dioxide is maintained in the electrolyte, where it serves, by its oxidation, both to depolarize the lead anode and replenish the acid in the solution.

**New York Subway Improvements.**—The arrangements for cooling and ventilating the subway in New York City have been practically completed. At the Brooklyn Bridge Station the air will be cooled by water coming from four wells 45 ft. deep. The water is forced through two cooling coils, one on each side of the station, each consisting of 4½ miles of 1-in. pipe and capable together of cooling 150,000 cu. ft. of air 15 degrees a minute. Two fans are provided on each side of the station for driving the air over the coils and forcing it through large galvanized iron ducts of rectangular section, which run along the platforms. Square vents are cut at intervals. In addition to the plants which cool the air by the use of water pipes, ventilation will be secured by a system which will renew the air throughout the subway every 20 minutes. Ventilating holes will be cut in the roof at every station, the total area of these being 7300 sq. ft. Thus far 680 sq. ft. of such openings have been provided. At a point midway between stations louvre valves will be installed, through which air will be forced out by the motion of trains. The total cost of the work now being done is $300,000.

**A New Steel Hoop Mill.**—Charles S. Thomas and John F. O'Dea, formerly of the Empire Iron & Steel Company at Niles, and Milton Coombs, formerly district manager of the hoop mills of the Carnegie Steel Company in the Youngstown district, have organized a new company, and will build a continuous steel hoop mill at Niles, Ohio. Plans for the new mill are now being prepared and contracts for the building and machinery will be ready to place in a short time.

## The American Graphophone Company's Gas Producer Plant.

At its Bridgeport, Conn., works the American Graphophone Company, maker of the Columbia phonograph, has installed a producer gas fuel plant, built by the Wile Power Gas Company, Rochester, N. Y. This installation has replaced all the illuminating gas formerly used for fuel purposes, and is said to have given better satisfaction than was derived from using illuminating gas, for the reason that the heats are obtained quicker, and, as the air blast necessary for illuminating gas has been done away with, the attendant inconveniences due to soot and dust are avoided. The cost of the producer gas is approximately 30 cents per 1000 cu. ft., which is practically one-third the cost of illuminating gas in Bridgeport for fuel purposes. The cost of fuel alone is about 15 cents per 1000 cu. ft. of gas, the additional 15 cents covering interest on the investment, depreciation and repairs on the plant, and attendance, all of which must be allowed for in comparing the cost with that of the gas as formerly supplied by the Bridgeport Gas Company. It is estimated that this new plant will save its cost within two years.

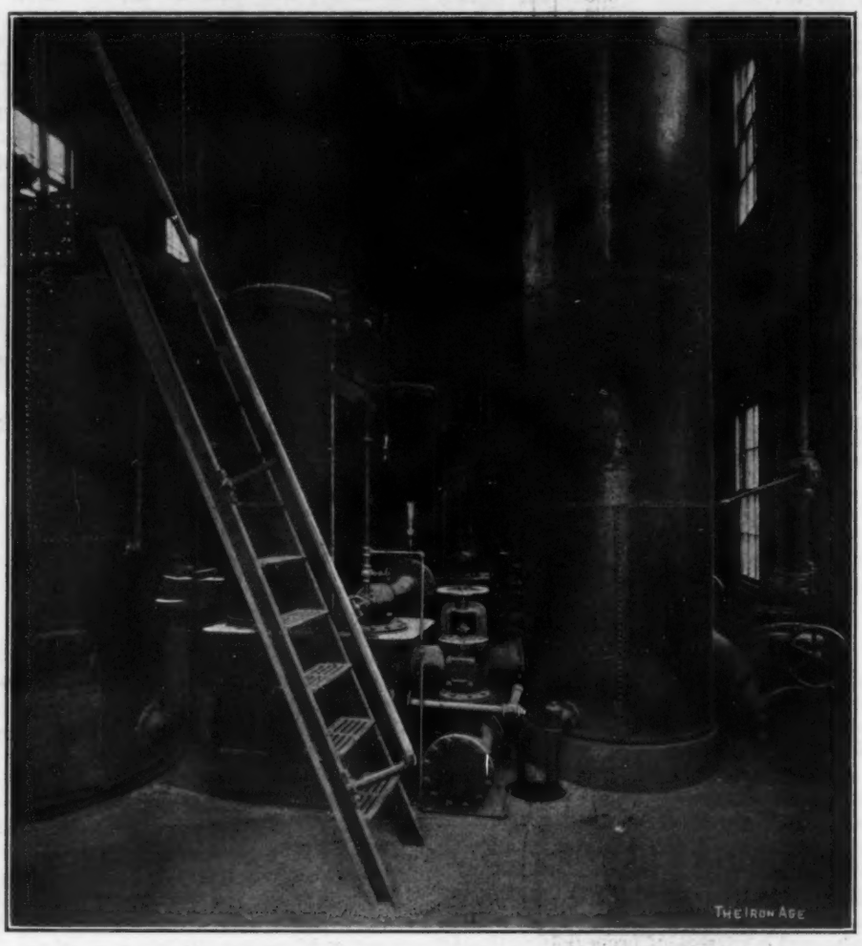



Fig. 1.—The Floor Level in the Gas Producer Building of the American Graphophone Company, Bridgeport, Conn.

The plant has a total capacity of 60,000 cu. ft. of producer gas per hour, the equivalent of 10,000 cu. ft. of illuminating gas. The gas is used chiefly for heating wax kettles for melting the wax used in phonograph records, and also for japanning, soldering, heating type metal, and wherever illuminating gas was previously used. The plant includes three units of 200 hp. each, or 600 hp. in all, and is run continuously 144 hours a week. One man by day and one by night are all that are required for its operation.

The halftone illustrations, Figs. 1 and 2, show two interior views in the plant, but the arrangement will be better understood from the plan and elevations given in the line drawing in Fig. 3. The producers are of the automatic type, as built by the Wile Company, and in a sense combine the principles of suction and pressure producers, as the gas is under pressure, but the producer is under suction. Since the gas is not used for power there are no engines to produce the suction necessary when a regular suction producer is used, and the provision of mechanical means is required to put pressure on the system of distribution and suction on the producer. This is supplied by steam ejectors which draw the gas through the water seal boxes from the producers and deliver it through the scrubbers into the pressure regulating gas receiver. The latter is automatic in its action of maintaining a constant supply of gas, there being provided what corresponds to an overflow. This is a return pipe leading back to the seal box, which is normally closed by a valve when gas is needed for the producer. When the supply exceeds the demand for gas, the receiver bell, being gradually raised to its upper position, causes a lifter attached to the bell to come in contact with a lever controlling the valve on the return pipe. This valve being opened, the continued action of the exhaust fan draws gas from the receiver through the seal box, instead of from the producer, and recirculates it through the scrubber back to the receiver until more gas is withdrawn through the main discharge pipe from the receiver. Steam and preheated air are continually being mixed in the saturator leading to the ash pit of the producer, and when the exhauster is acting on the receiver this mixture escapes through the ash pit door. As air and steam are drawn through the producer only when the exhauster is acting upon it, and in amount to make the necessary quantity of gas, a uniform fire temperature, and consequently a uniform quality of gas, are obtained. Each of the three units in this plant are so arranged that all three can work together or any one can be operated alone. The operation is simple and is attended to by the men who formerly operated the boilers.

The Wile Power Gas Company builds the automatic

producers in sizes ranging from 15 to 500 hp., and the capacities ranging from about 1200 to 40,000 cu. ft. of gas per hour. The larger plants are often supplied with gas with variable and light loads; no escape of gas or dirt around the plant; ability to clean without shutting down; elimination of expensive automatic feeds and complicated revolving grates, and economy of space, attention, labor and first cost. The company also builds suction gas producers for power installations and water bottom gas producers for furnishing large quantities of gas for direct use in furnaces as fuel, where the gas is wanted hot, and cleaning is unnecessary. A duplicate of the American Graphophone Company's plant is now being built for the Edison Phonograph Company.

Fig. 2.—View on the Charging Platform, Showing Coal Conveyor.

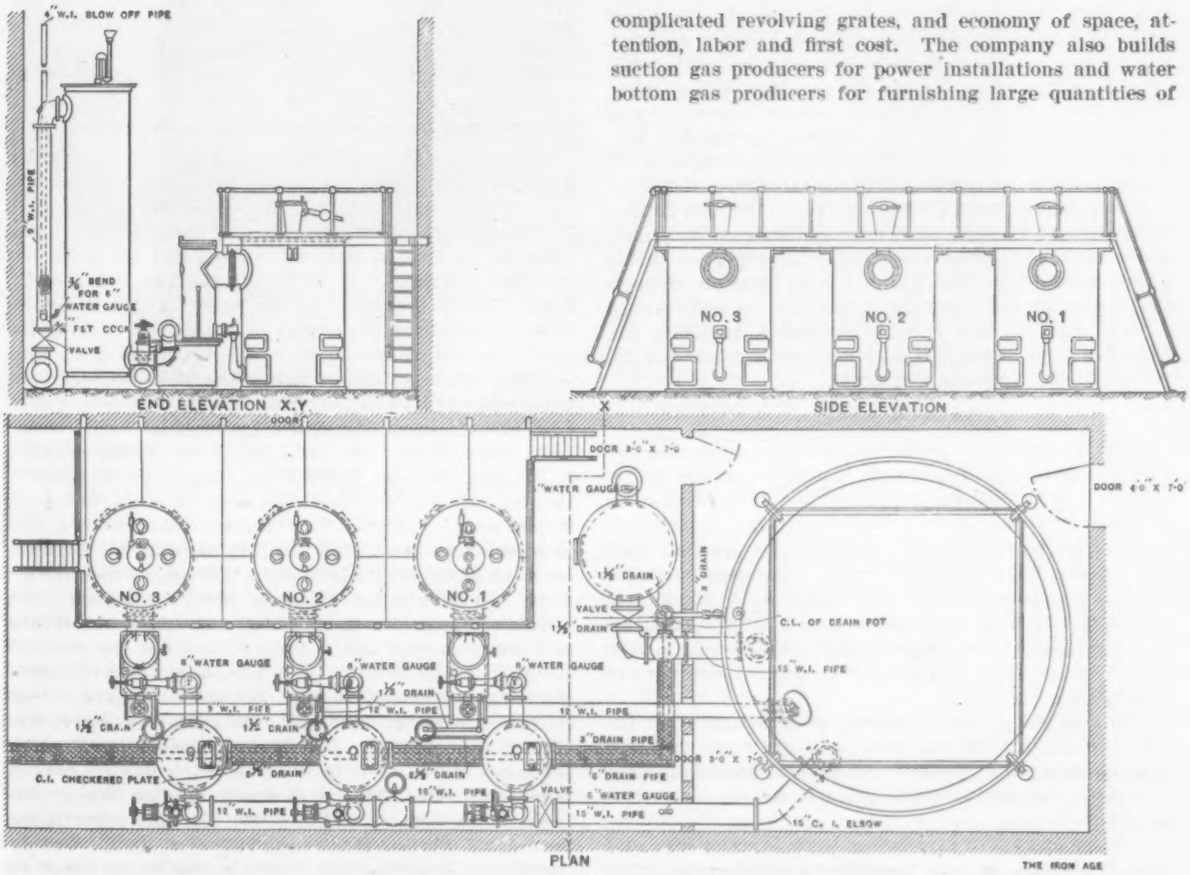



Fig. 3.—Plan and End and Side Elevations of the Three-Unit Installation of Wile Automatic Gas Producers.

exhaust fans in place of steam ejectors. The main advantages which are claimed for this type of producer over all types where gas is supplied under pressure are: Automatic and continuous operation; uniform quality of

## Ore Shipments Less Than Expected.

DULUTH, MINN., September 2, 1906.—Minnesota ore shipments for the month just past show a greater falling off than was anticipated in this correspondence last week, with a total of but 3,819,739 gross tons as follows:

| Railroad. | August, 1906. | August, 1905. |
|---|---|---|
| Duluth, Missabe & Northern | 1,602,000 | 1,433,555 |
| Duluth & Iron Range | 1,310,779 | 1,245,708 |
| Great Northern | 906,960 | 700,998 |
| Totals for the month | 3,819,739 | 3,380,261 |

The year's shipments for these three roads, which handle all Minnesota ore traffic, has been as follows in gross tons:

| | | |
|---|---|---|
| Duluth, Missabe & Northern | 6,584,331 | 5,589,490 |
| Duluth & Iron Range | 5,161,722 | 5,032,112 |
| Great Northern | 3,578,233 | 3,165,133 |
| Totals for the season | 15,324,286 | 13,786,735 |

To offset this 1,538,000 tons excess over last year to this time, the old ranges show a falling off, and none of the Lake Superior districts will do another month's business this year as large as August.

### New Operations on the Mesaba.

The Rogers Iron Company, a portion of the Buffalo & Susquehanna Company, recently took over on option for lease a tract in the northeast part of section 22, T 57-22. It had been shown to contain some 2,500,000 tons of low grade washable ore, and 50 cents a ton was the royalty on 100,000 tons a year, with a bonus of $70,000. The tract was offered at that time to other independent steel makers who have no ore reserves, but they declined it, relying upon their own efforts to find ore on other Mesaba tracts. Rogers explorations since the option was taken have increased the tonnage until it now looks as though the mine might contain at least 6,000,000 tons. Explorations are still in progress, and will continue some time.

M. L. Fay has been drilling some time on the northeast, one-quarter of the northeast, one quarter of section 9, T 58-16, and on lands belonging to the Yawkeys of Detroit, Mich., and has found a deposit amounting to about 1,000,000 tons of merchantable ore. The Yawkeys also own a large part of section 4, which joins on the north, while all other surrounding land is the property of the United States Steel Corporation, through some one or another of its original factors. The new property is about a mile southwest of the Biwabik mine, and helps to connect the Biwabik ore deposit with that in the vicinity of McKinley.

Work on the new Wacouta mine of the Pitt Mining Company and the old Commodore of Corrigan, McKinney & Co. has so far progressed that both properties should be mining shortly. The Wacouta is an open pit property near Mountain Iron, and the Commodore an underground mine at Virginia that is being changed to a milling pit. Both are large properties, and will cut considerable figure next year in Mesaba shipments.

### On Other Ranges.

John T. Jones and associates, who are developing the Empire mine, Cascade district, Menominee range, are to operate it by the milling system, as there is an overburden of but 4 ft. They have a shaft down 120 ft. and will drive raises to surface and bring out the ore that way. The deposit, which is about 45 per cent. low-phosphorus ore, has been proved 800 ft. wide across an entire 40 acre tract and will be of immense tonnage and very desirable as a high-silicon mix. Some ore will be mined during the winter, but no large tonnage can be secured much before next spring.

Six diamond drills are operating in Swanzey for the Cleveland-Cliffs Company, most of them close to Little Lake station. It is reported that several good finds have been made and that another year will see a mine or two opened thereon.

A large amount of exploratory work is under way, and more is planned, by both the Oliver and Cleveland-Cliffs companies, in the immediate vicinity of Ishpeming and Negaunee, on lands that had been either drilled or explored by pits and shafts years ago. The conviction is now general that there is a large tract in this section that will amply repay more thorough and deeper exploration with big drills, along the trend of the formation. This work is adjacent to old mines and in the cities mentioned, as well as further out, and there is every reason to expect that several of the well known properties of the district will be connected and that former ore lenses will be shown to have far more strength, persistency and depth than they have ever been proved. The work is among the most important, in the way of proving additional reserves, that is now under way in the entire Lake Superior district.

The Oliver Iron Mining Company's large crusher at Escanaba, which has been idle for some time, is now working again, and on Menominee ores.

### Rapid Work in Increasing a Mine Output.

One of the most remarkable cases of rapidity of bringing a Mesaba mine into operation on a large scale is at the Hull-Rust, which up to and including last year had been worked underground. The Oliver Iron Mining Company decided to strip the mines and laid very thorough and careful plans for the work, which it decided to carry on by company account. The entire surface was carefully gone over and redrilled to give close cross sections of the ore body and its superincumbent earth, an engineering plan for stripping, the final disposition of the tracks and approaches and the waste spoils was made and the work begun. The work was commenced on the line of the Mahoning open pit and worked south in a triangular space, and during the summer there have been many shovels working in this ground, both stripping and mining, the latter following close at the heels of the strippers. In the 60 acres covered by this stripping operation and the Mahoning open pit there have been for a considerable period from 12 to 14 steam shovels, with some 1500 men, and while it is a little early to give figures of results, they will be found most astonishing when they are given out. The same company proposes another work of similar magnitude and somewhat similar nature at a point further east on the Mesaba range, where it has a number of properties that have been practically idle for some years, but contain a large tonnage of ore and can be made one immense open pit. They will probably be opened as such during the coming 12 months, and an enormous quantity of ore can be produced therefrom on short notice.

### Mining Valuations Increased for Taxation.

Mine tax values all over the Lake Superior region have been materially raised this year. Michigan's State Board is now at work, and is playing havoc with both iron and copper mines. In that State valuations are supposed to be upon actual cash values, and the raise has not been completed. In Minnesota the Tax Board of St. Louis County has just filed its report, which shows increased valuations amounting to $20,000,000, making the total assessed values upon which taxes are paid $60,998,341. Mines valued at more than $1,000,000 each are assessed as follows: Oliver Iron Mining Company, Fayal, $3,386,250; Adams, $2,596,126; Spruce, $1,444,000; Mountain, $6,546,750; Burt-Pool, $3,386,250; Monroe-Tener, $1,354,500; Morris, $3,386,250; Hall-Rust, $3,950,625; Pioneer, $1,467,375; Mahoning Iron & Steel Company, Mahoning mine, $2,821,875; Corrigan, McKinney & Co., Stevenson mine, $1,128,750; Tod, Stambaugh & Co., Biwabik mine, $1,693,125. There are no other mines assessed for more than $1,000,000 each, though several companies have combined valuations on their several mines amounting to more than that sum. Among these are the Jones & Laughlin mines, with a gross assessment of $1,305,187; Shenango Furnace Company, $1,215,288; Republic Iron & Steel Company, $947,649; Pickands, Mather & Co. (including Cypress), $3,086,236. The entire Mesaba range, so far as it is included in St. Louis County, is assessed at $57,179,427, and the Vermilion range, also in St. Louis County, at $3,803,887. On this latter range there is no mine assessment outside of St. Louis County except that of section 230, which is now in the hands of the Midland Steel Company. On the Mesaba range there is a very considerable value outside of this county in the newer lands, held chiefly by the Oliver and Great Northern interests, on what is known as the leaner, sandy portions of the range. Assessments on this have not yet been fixed.

D. E. W.

## The Niagara Turret Double Seamer.

For double seaming round bottoms on cylinders in the making of cans and similar work the Niagara Machine & Tool Works, Buffalo, N. Y., has recently brought out the machine herewith illustrated. With the regular faces the 36-in. seamer in this pattern is suitable for iron from Nos. 18 to 22 gauge and the 48-in. seamer for Nos. 20 to 22 gauge. For lighter material extra seaming rolls are needed. Prior to double seaming the ends of the cylindrical body as well as the bottom must be flanged. It is not necessary to stamp the bottoms with expensive dies, nor to set down the seam by means of another machine.

One of the pedestals carries the seaming disk on which the work rests. The other supports the double

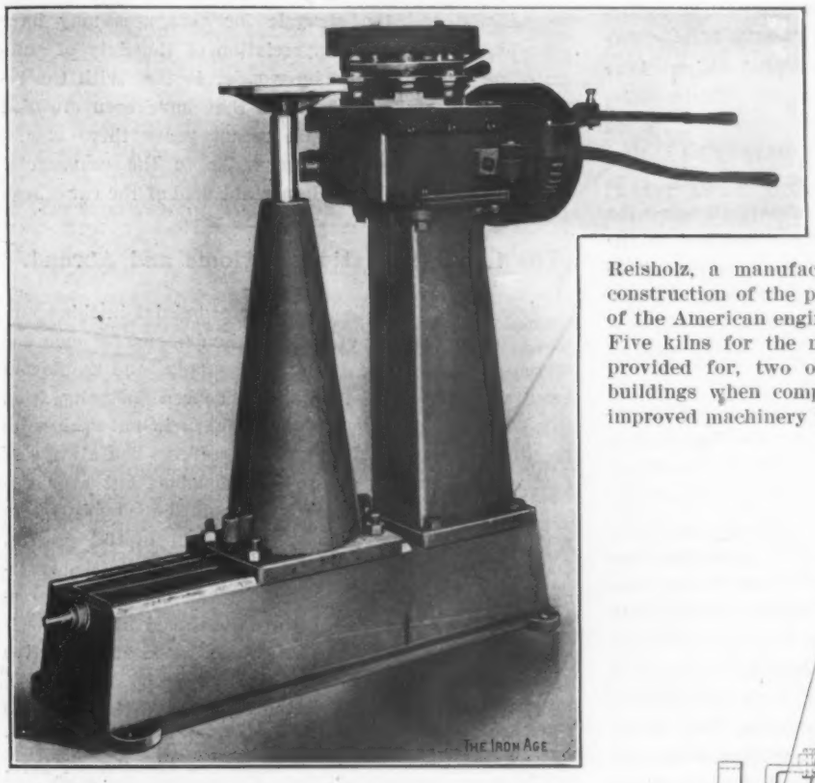



Fig. 1.—A New Turret Double Seamer Built by the Niagara Machine & Tool Works, Buffalo, N. Y.

seaming head, with a slide on which the double seaming device is mounted. Three rolls driven by gears are brought in contact with the work successively until the seam is completed. The turret head and slide are actuated by levers conveniently located.

One of the principal advantages of this machine consists in that it can be operated by cheap labor, skilled operators not being required. This machine is powerful and is claimed to produce a perfectly tight seam. The regular equipment includes a seaming disk 12 in. in diameter that will answer for larger work as well. For work from 9 to 12 in. in diameter an extra seaming disk is required.

Fig. 1 shows a general view of the seamer, and Fig. 2 a detail section through the turret head, showing its construction and the method of manipulating it. Referring to the latter *a* represents the tight and loose driving pulleys. On the short shaft on which these pulleys are mounted is a pinion, *b*, engaging with the gear *c*, on a shaft which extends under the base of the turret. This shaft is splined and carries a bevel pinion, *d*, in the interior of the casting, which meshes with a larger bevel gear *e*, on a vertical shaft projecting up into the turret. A spur gear, *f*, on the top of this shaft, meshes with three smaller spur gears, *g*, *h* and *i*, each connected with a seaming roll, such as the one shown at *m* in operating position. The turret is rotated to either of its three positions by a handle, *l*, after first withdrawing, by means of the latch, the pin which holds the turret in its various positions. The seaming rolls are brought against the work by manipulating the lever *j*, or for greater leverage the lever *k*. This causes the whole of the turret mechanism to be projected toward the work table. The amount of lateral displacement necessary for this is allowed for without interfering with the drive, by having the bevel pinion and its supporting bracket free to slide on the splined shaft driven by the gear *c*.

## A Carborundum Plant for Germany.

The Carborundum Company, Niagara Falls, N. Y., has started construction work on a large branch plant in Germany. This company is the sole American manufacturer of carborundum in the various forms in which it is used for grinding purposes, and the demands of its European trade have increased so rapidly that the establishment of a branch works on the Continent has become absolutely necessary.

A German company has been formed under the title "Deutsche Carborundum Werke, G. m. b. h." The new works are located at Reisholz, a manufacturing suburb of Düsseldorf. The construction of the plant is under the supervision of one of the American engineers of the Carborundum Company. Five kilns for the manufacture of vitrified wheels are provided for, two of these to be built at once. The buildings when completed will embody all of the most improved machinery for the manufacture of abrasive ma-

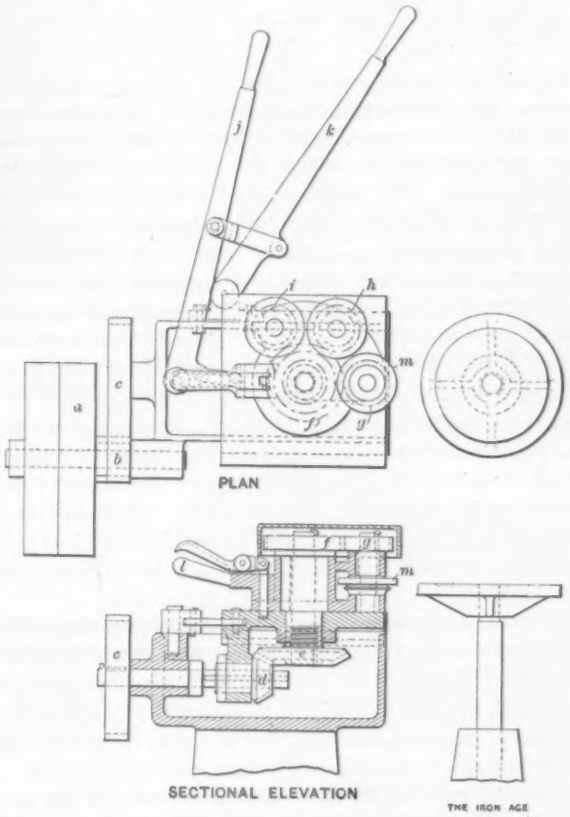



Fig. 2.—Details of the Turret of the Niagara Double Seamer.

terials. It is expected that the new works will be in operation by January 1, 1907.

The Carborundum Company has for some time maintained large stores in London and Berlin, and has agencies in most of the principal cities of Great Britain, Germany, Denmark, Norway, Sweden and Russia. With the completion of the German works the European business can be largely increased on account of the better service that can be given.

# THE IRON AGE

1855—1906.

New York, Thursday, September 6, 1906.

DAVID WILLIAMS COMPANY, - - - - - - - PUBLISHER
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## Car Wheel Buying and Manufacturing.

As one result of the discussion of the past two years definite action is about to be taken by the Master Car Builders' Association changing the accepted design of car wheels so as to secure greater strength. The association's Committee on Cast Iron Car Wheels recommended an increase of ⅛ in. on the side of the flange and a change in the taper of the tread from 1 in 25 to 1 in 20. It is calculated that these changes will increase the strength of the flange by 20 per cent. or more, depending on the line taken as the breaking section. Since a committee of the American Railway Engineering and Maintenance of Way Association has also approved the change, it is expected that the letter ballot about to be taken will result in its adoption.

Like the rail manufacturers, the manufacturers of cast iron car wheels have had to meet steadily growing demands from the railroads. Car capacity has increased greatly, and heavier cars and heavier locomotives have brought an increasing number of rail and car wheel failures. The changes in car and locomotive capacities were not difficult to secure. Indeed, particularly in the case of steel cars, the innovation was pressed upon the railroads by the manufacturer. And for heavy steel cars and Mogul locomotives the railroads have been willing to pay the increased cost. But rail and car wheel changes meant a revolution in practice approved by long usage, established by the co-operation of manufacturers, railroad engineers and important engineering associations. In the case of car wheels the factor of safety may have been considered ample to cover the added demands of the heavy capacity cars. But railroad engineers have become more and more insistent in calling for better wheels, and car wheel foundries have been put to it to meet the new requirements. The steel tired wheel, which had well established its place in passenger service, has been seriously considered by some roads for their 100,000-lb. freight cars.

The manufacturers of cast iron car wheels have been making for some time the general answer to the criticisms of their product that if the railroads would pay for high grade chilled wheels there would be no difficulty in securing them. The fact that the steel tired wheel is thought of for the heaviest freight service is an indication that some railroads at least have come to the conclusion that more money must be paid if the more exacting requirements of the past few years are to be satisfactorily met. The complaint of the car wheel founders has been that the railroads have insisted that car wheel prices be lowered year by year, but at the same time the severity of tests and the service requirements have increased with every year. It has been stated that on account of the increased loads carried the severity of wheel service has doubled in the past five years, which might naturally be expected to lead to some relaxation in the time of service for which guarantees are required. Instead, there has been an increase over the three or four years' service which was formerly considered ample.

If the pressure for cheaper and at the same time better wheels is now to give way to co-operation by the railroads in an effort to increase the efficiency of the cast iron wheel, even at a greater outlay, the manufacturers argue that the way is open for the successful meeting of the new requirements without a resort to the steel wheel. The great drawbacks to the solution of the problem have undeniably been the wheel maker who accepts orders calling for longer guarantees at a price making it impossible to furnish a first-class wheel, and, on the other hand, the railroad purchasing agent who imposes conditions and prices which the manufacturers of high-grade wheels will not attempt to meet. It is a case in which competition and the struggle for cheapness may have crowded out a proper appreciation of the duty of safeguarding human life. The wonder is that with the refinements in rail specifications that have been crowded upon the manufacturers in recent years there should have been so general a surrender to the commercial spirit in the scarcely less important field of the car wheel.

## The Labor Situation at Home and Abroad.

Scarcity of labor is a familiar complaint in this country. In every period of activity the demand for men has increased more rapidly than the supply, and employers have at such times always experienced difficulty from this cause in endeavoring to push their enterprises to the limit of their facilities. The scarcity has always of course been most acute in skilled labor, but even unskilled labor has been found in insufficient supply whenever manufacturing activity shows substantial growth. Immigration has not filled the gap, large as the movement hither from other countries has been. The pressure for more labor has always continued until the setting in of a reaction and the slowing down of productive operations.

It is an interesting fact that other countries than the United States are now feeling the same need of a greater supply of labor that has so long been experienced here. Our northern neighbor, Canada, finds that its activities are hampered for this reason. Its manufacturing industries are in progress of expansion, but much slower speed is being made in this respect than would be the case if an ample supply of labor was available. Our Canadian correspondent considers this an important feature of present Canadian conditions, stating that his country would not have been such a large buyer of our manufactures the past 12 months if Canadian employers had been able to secure the labor needed to supply established plants and man new enterprises. This experience of the Dominion is precisely in parallel with that of the United States, manufacturing expansion proceeding simultaneously with the building of railroads, the increase in mining operations and the opening up of wild regions to settlement, all of which demand a heavy increase in the labor supply. Our southern neighbor, Mexico, is also feeling in the same way the effect of the awakening of enterprise along manufacturing and transportation lines, while the mining interests of the country are steadily demanding a greater supply of labor.

The conditions thus set forth in America would seem to be peculiarly applicable to this continent because of its comparative newness and the task of developing great areas of virgin country. Turning to Europe, however, a decided scarcity of labor is at this time disturbing the equanimity of German employers, many of whom would like to increase their business to meet the pressing de-

mands upon them, but find themselves unable to secure the necessary working force. Coal mines cannot be operated to their capacity because the supply of skilled miners is not equal to the increase in mining development. Unskilled labor is also in inadequate supply, and German employers are drawing on southern and eastern Europe for additions to their native forces. Production could be increased quite considerably if more efficient workmen could be secured, especially men of some skill or experience in the lines in which they are needed.

Of all the great manufacturing countries, England appears to be best supplied with labor. While unemployed members of British trade unions are fewer in number than at the corresponding time last year, no complaint of scarcity of workmen is observed in the British trade journals. On the other hand, *Engineering* for July 27 publishes extracts from the report of John Burns, president of the Local Government Board, stating among other matters that "the unemployable are increasing in numbers, a sad fact to be dealt with on some subsequent occasion."

## The Growth of Labor Saving Mechanisms.

The strenuous effort to increase output which characterizes every American industry under the present condition of extraordinary demand has caused much greater attention to be given to the details of economical handling of materials and products. While many manufacturing establishments, especially those that have been built in recent years, are well equipped with such types of cranes, hoists, elevators, conveyors and industrial railroads as are adapted to their individual needs there are numerous others that still depend to a great extent upon manual labor to perform the same functions. The cost of man's labor is greater, and there is the still other very important objection that men cannot work so quickly, with so little delay of machinery, as does the mechanical system, whatever it may be, that is specially intended for the work.

Where labor is heavy, or where the volume is great, the crane, carrier or hoist saves valuable time. In supplying work to a machine, for example, every minute saved in preparing the work, so that the tool may be operated as continuously as possible, is a distinct gain in the volume of production, and the ever prevailing cry to-day is for increased production. With customers sending urgent and even angry letters and telegrams demanding deliveries, with order books becoming more and more unwieldy in the ratio of their totals to the limit of production, it is little wonder that we hear manufacturers strongly regretting that they had not prepared themselves to get the greatest possible production out of their works before the demand required it. The labor saving device has been a friend in need to many such men. A hoist here, a new crane or two, a carrier system or some other means of lightening the shop burden, and at the same time reducing costs and increasing profits correspondingly, has proved the advantage of machinery over human labor in very many instances during the past year. The result is a continued demand upon manufacturers of all sorts of labor saving devices of this description.

A general scanning of the industrial and commercial field clearly shows that the mechanical appliance for conveying materials and goods, both in process of manufacture and ready for the market, is almost in the infancy of its usefulness. The manufacturing world is full of opportunities for adapting mechanical systems for the more economical conduct of business. In commercial or transportation lines the field is probably even broader. The announcement of the equipment of a Mississippi steamboat with elevators and a conveyor system for the handling of freight and coal is significant, for it opens a field of usefulness for conveyor systems of several descriptions. The owners of this new boat were led into substituting mechanical for manual labor by the unreliability of the men upon whom they have to depend to do the work of loading and unloading vessels. The frequent strikes of longshoremen in this and other countries should result in similar measures on the docks and piers and on the ships which ply many other waters than those of the Mississippi and its tributary streams. To-day most of the coal and grain and other bulky freights of like general description is handled exclusively by power-driven mechanisms. Occasionally, however, one still sees a large coal depot which points the difference between old and modern methods, where hand cars convey the coal from the handling platform to the sheds, materially increasing the time required in handling, and with such waste of time the cost is correspondingly greater. Many of the smaller steamers which carry freight between the large cities and places comparatively near at hand could be economically loaded by means of a conveyor system, replacing large gangs of men who must be regularly employed. The electric motor plays an important part in the expense of such a system, keeping it down to comparatively small cost, for power can be purchased by meter rates and used only when the mechanism is operating. These systems are not expensive when the cost is compared with the reduction in the payroll. The saving in wages of a few men will pay the interest on the cost of quite an expensive system of conveyors, while the simplest form is all that would be necessary in most instances.

These statements are but generalizations when compared to the great field of usefulness which the power conveyors of many descriptions offer. In nearly every line of industry the opportunity exists for saving money by substituting power for man's labor. The impelling force of a period of extraordinary business activity should bear results not only in the present but in the future, as men learn from experience and prepare for good times when business conditions are not of the best. The labor saving device is just as important in times of industrial dullness as in times such as these. In both cases the better the facilities for manufacturing the less the cost of the product. In busy times the manufacturer values volume fully as much as he values cost, sometimes more so. In dull times he wants the lowest possible cost that he may have the better chance for taking such business as may come up. The labor saving device produces both greater volume and lower costs.

All unconsciously perhaps, our railroad engineers are exhibiting a characteristic strain of Yankee ingenuity. When reasonably persistent working along one line fails to produce the result desired the American inventor switches over to a new line and tackles the problem in reverse order, if it seems to be necessary. In another part of this issue we have a description of the new all-steel fireproof and noncollapsible cars which have been adopted for all future passenger equipment of the Pennsylvania Railroad. Reports from other directions show that the investigations of other roads promise an early and universal following of the Pennsylvania's example. Since it appears that the unseemly high proportion of accidents on railroads of the United States, as compared in official statistics with those in England and on the Continent, cannot be reduced by avoiding collisions, misplaced switches, &c., it is now the obvious intention to make the best of the situation by rendering smash-ups

as comfortable as possible. If the liability of cars to take fire and telescope can be reduced, mortality may be decreased quite considerably.

## Massachusetts Free Employment Bureaus.

The State of Massachusetts is to establish free employment bureaus in several cities, the last Legislature having passed an act providing for them and appropriating $5000 a year for their maintenance. The provisions for the establishment of these bureaus are similar to those of the State of Connecticut and other States where the commonwealth provides this means of assisting its citizens who wish to find employment or who wish to employ. The privilege of registration will be confined to residents of the State. The bureaus will be under the direction of the chief of the Bureau of Statistics of Labor, who shall investigate the advisability of such institutions in the various cities and shall report to the Governor and his council the result of his observations.

It is planned to establish four bureaus, the cities named before investigation being Boston, Worcester, Lowell and Springfield, though this may not be the ultimate list. The presence of free labor bureaus maintained by metal trades associations in Boston, Worcester and Springfield may influence the Bureau of Statistics of Labor to select cities where no such privilege is accorded their working people. While the metal trades associations usually confine their applicants to the metal industries, still they cover a considerable portion of the field of industry, and in others of the larger cities of the State there is no provision whatever for the purpose.

## July Iron and Steel Exports and Imports.

As compared with June, the exports of iron and steel decreased and the imports increased in July. The Bureau of Statistics of the Department of Commerce and Labor reports the total value of exports of iron and steel and manufactures thereof, not including ore, at $12,766,212, against $14,085,003 in June. The commodities for which quantities are given show quite a diminution. Taking such commodities, the following table gives the exports for July and for the seven months ending with that month in 1906 and 1905:

*Exports of Iron and Steel.*

| | July, | | Seven months, | |
|---|---|---|---|---|
| | 1906. | 1905. | 1906. | 1905. |
| Commodities. | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 6,530 | 1,882 | 46,477 | 31,541 |
| Scrap | 838 | 242 | 7,155 | 4,284 |
| Bar iron | 4,313 | 1,855 | 33,186 | 19,989 |
| Wire rods | 1,057 | 125 | 4,364 | 3,464 |
| Steel bars | 2,316 | 1,081 | 16,485 | 12,565 |
| Billets, ingots, blooms | 16,970 | 12,664 | 146,503 | 106,663 |
| Hoop, band, scroll | 172 | 174 | 2,212 | 1,602 |
| Iron rails | .... | .... | .... | .... |
| Steel rails | 23,623 | 26,268 | 203,352 | 155,194 |
| Iron sheets and plates | 1,144 | 266 | 6,644 | 3,492 |
| Steel sheets and plates | 7,494 | 2,770 | 52,083 | 36,304 |
| Tin plates and terne plates | 125 | 552 | 10,060 | 5,982 |
| Structural iron and steel | 10,300 | 6,564 | 62,710 | 45,540 |
| Wire | 9,668 | 11,979 | 98,343 | 79,010 |
| Cut nails | 603 | 501 | 4,101 | 5,021 |
| Wire nails | 3,463 | 3,003 | 31,219 | 21,894 |
| All other nails, including tacks | 445 | 373 | 2,823 | 2,438 |
| Pipes and fittings | 9,348 | 12,021 | 88,229 | * |
| Totals | 98,409 | 82,320 | 815,946 | 534,985 |

* Quantity not stated prior to July 1, 1905.

The above total for July, 98,409 gross tons, compares with 107,585 tons in June, 136,592 tons in May, 120,015 tons in April, 138,679 tons in March, 97,719 tons in February and 109,506 tons in January. It will be observed that the tonnage of pipes and fittings, not separately given prior to July 1, 1905, is now stated for the monthly table so that comparisons may hereafter be made with this tonnage included.

The value of imports of iron and steel and manufactures thereof, not including ore, in July was $3,287,916, against $2,897,622 in June. The imports of commodities for which quantities are given show an increase in June of about 25 per cent. Much of this increase was in pig iron. The imports of such commodities for July and for the seven months ending with that month in 1906 and 1905 were as follows:

*Imports of Iron and Steel.*

| | July, | | Seven months, | |
|---|---|---|---|---|
| | 1906. | 1905. | 1906. | 1905. |
| Commodities. | Gross tons. | Gross tons. | Gross tons. | Gross tons. |
| Pig iron | 37,509 | 21,927 | 184,322 | 109,416 |
| Scrap | 113 | 147 | 9,961 | 7,916 |
| Bar iron | 4,146 | 3,383 | 20,447 | 19,143 |
| Rails | 466 | 202 | 2,519 | 9,898 |
| Hoop, band and scroll | 27 | 522 | 7,204 | 1,273 |
| Billets, slabs, bars, &c., steel in forms n.e.s. | 1,050 | 2,364 | 11,659 | 7,970 |
| Sheets and plates | 137 | 168 | 2,165 | 1,235 |
| Tin plates and terne plates | 4,904 | 4,705 | 29,128 | 40,732 |
| Wire rods | 1,714 | 1,094 | 10,649 | 9,151 |
| Wire and articles made from | 546 | 235 | 3,304 | 2,348 |
| Structural iron and from | 2,103 | 1,664 | 22,953 | 3,064 |
| Chains | .... | 18 | .... | 153 |
| Anvils | .... | 14 | .... | 107 |
| Totals | 52,715 | 36,443 | 304,311 | 212,406 |

The imports of iron ore in July were 75,429 tons, against 73,532 tons in July, 1905. The exports of iron ore in July were 47,255 tons, against 38,613 tons in July, 1905.

The Carnegie Steel Company has invited the members of the Engineers' Society of Western Pennsylvania and their friends to visit the Isabella Furnaces at Etna, Pa., on Saturday, September 8, from 2 to 5 p.m. The works comprise an up-to-date blast furnace plant of three furnaces, each of 40 tons capacity per day. They are equipped with electrically operated charging machines, Brownhoist bridges for handling ore, and a Uehling double strand pig casting machine of 1200 tons capacity daily. One of the furnaces is supplied with dry air by the Gayley dry air process. The dry air plant has a capacity of 45,000 cu. ft. of air per minute and reduces the moisture 30 per cent. It consists of two York refrigerating machines, each with steam ends of 300 hp., and refrigerating ends of 225 tons refrigerating capacity; one York double pipe brine cooler and one York atmospheric ammonia condenser. The refrigerating chamber contains 100,000 lin. ft. of 2 in. pipe.

The National Supply & Machinery Dealers' Association will hold a special meeting in Detroit, Mich., on September 26 and such following days as may be required. While the notice issued is general, and all members of the association are invited to be present, the call for holding it comes entirely from the members who deal exclusively in machinery or in machinery and supplies. The various supply committees have not made any suggestions as to a meeting. If a sufficient number of supply dealers be present there will undoubtedly be something of interest brought forward, but the indications now are that the meeting will be very largely devoted to the interests of the machinery dealers. The executive committee of the association will meet on the Monday and Tuesday preceding the special meeting above referred to.

Though the whaleback has nearly disappeared from the lakes as an ore carrier, attention has been directed recently to the good work of the McDougall, a quadruple expansion pipe boiler boat of this type. Though the McDougall formerly had a record for high coal consumption and very moderate speed, her present average is only 250 tons of coal on a round trip and a speed of 13½ miles an hour is easily maintained. The McDougall made three round trips in 24 days this season, towing a barge to Duluth on one of the trips. Another record is a 7-day trip from Ashtabula to Duluth and return.

## Co-operation Between Transportation and Industrial Interests.

In a straightforward way Henry W. Thornton, superintendent of the Pennsylvania lines west of Pittsburgh, has discussed the relations between transportation lines and the managers of industrial enterprises in a paper read before the Traffic Club of Pittsburgh. We quote from it the following:

In the first place, there should be absolute frankness and honesty between the managers of the plants and the officers of a railroad company. If the industry is depending upon the arrival of certain cars of inbound material, do not answer an inquiry by saying that the cars will be placed the next day when you do not know whether it will be the next day or the next week. If the consignee is to be disappointed in the arrival of his material it is very much better to tell him when it will be in, if you know, giving him an opportunity to make other arrangements if you cannot get it to him soon enough. If he asks for a dozen or so cars to be placed at his plant for a particular shipment and is depending upon the same, do not tell him that the cars will be delivered that afternoon when you know perfectly well it is impossible to furnish any cars at all, only a proportion of what he asks. Rather than embarrass the shipper tell him frankly what the situation is and give him an opportunity to ship his freight over another road. That may be heresy, but is the best course in the long run. It will ultimately be to the credit of your road. On the other hand, as superintendent of a plant, do not ask a division superintendent to furnish 30 cars when you only need 15, figuring that he will be compelled to cut your order through circumstances beyond his control, and by placing your requirements high enough you will get about what you really want. In time such practices are found out and future requests are not given full weight.

**Local Industries Deserve Preference.**

In the matter of car supply an industry local to a railroad has the right to expect that its requirements will be filled in preference to the requirements of the competitive industries which may draw their supply from more than one road. The purely local industry is absolutely dependent upon the railroad company for its facilities, and the railroad company practically decides, through the car supply furnished, what business that industry may do. Frequently it is thought that competitive business should take preference, and cars are often sent off of a company's line to other roads for switched business of this character, while, perhaps, at the same time local or noncompetitive plants where you can get all the business are suffering for cars. A railroad should consider that an industry located on its line, to which it has sole access, should receive every consideration and assistance that it can be given for the transaction and development of its business, to the exclusion, if necessary, of all others. The strength of a railroad is the prosperity of its local shippers, and it is suicide to sacrifice those shippers in a killing competition for other business. The railroad which pursues such a policy drives existing plants from its line and makes doubtful the location of new ones.

A railroad company endeavors to supply sufficient cars to transact its business. The number of cars it builds is based upon the amount of tonnage anticipated, and the average daily movement that may be expected. It is just as much a duty on the part of an industry to unload its cars promptly as it is for a railroad company to give the cars prompt movement in road service. It is not fair to the railroad company to use those cars as storehouses and, in the long run, it reacts upon the industry so doing, as it tends to reduce the general car supply. The argument that a slow road movement justifies the consignee in dilatory unloading is illogical, for two wrongs never yet made a right. A railroad company does not want the money accruing through demurrage charges. What it wants is the cars; and it is the duty of every industry to put forth every effort to release cars promptly. If such a spirit prevailed at every plant, there would be little need of car service regulations.

**New Industries Should Consult Railroad Engineers.**

In laying out a new industry it is highly important that the railroad company's engineer should be consulted. Unfortunately, it often happens that an industry is built, after which the railroads are told to get to it. This is bad for the railroads and bad for the industry, for frequently the forced arrangements of tracks is such as to prevent a logical development of the plant and, moreover, switching is made slow and expensive by a bad track layout. I have in mind one plant which was laid out in opposition to the railroad company's suggestions. The result is that, in order to make a contemplated addition, it will be necessary for the plant to buy additional ground at a very high figure, while, had the original suggestions of the railroad entirely been carried out, such necessity would have been avoided.

As I have said, a railroad company should not be afraid to spend a little money to give a patron the necessary service in emergencies; so industries should not hesitate to spend a little money to help out a railroad, especially when by so doing they are helping themselves. At a certain plant the bar between the tender and the engine broke, which would have necessitated sending the engine some distance to the shop. The manager of the plant had his own force at the blacksmith shop to repair the engine, which enabled it to switch the rest of the day; while, otherwise, the plant and the railroad would have both suffered had the engine been forced to return to the house. The occasional tank of water or bucket of sand which saves time for the shifter, will, in the long run, help the industry by avoiding the necessity of sending the engine back to the shop.

There are many little ways in which an industry can help a railroad. If a car is placed so that it is not exactly on the spot the manager of the industry wants, but so he can very well get along, and he insists upon that car being put to the inch he desires, for no apparently good reason, he has not only delayed his own switching, but he has probably made the shifter late in getting to some other industry, with the result that, if every manager acted that way, the engines in the employ of the railroad company in yard service would never get any work done.

Our methods and practices in railroading have changed greatly in recent years. The introduction of locomotives of greater capacity, forced by the conditions of the times, has brought longer trains, more difficult to handle, which, with the equipment of cars with air brakes and the consequent liability of sudden stoppage and rough handling, has rendered lading more liable to damage. It is reasonable for the railroads to expect that proper consideration should be given these conditions in the preparation of lading for shipment, and no shipper should forward packages which he knows are improperly protected, feeling that if they reach destination in good order, well and good, but if not the carrier will be compelled to pay his claim. The railroad is right in expecting some co-operation from the shipper in correcting such matters.

**Fairness in Claims.**

Claims should not be presented for adjustment that are not really legitimate upon the supposition that, because of the volume of traffic controlled by the claimant, an unreasonable settlement can be forced. Cars destroyed or damaged at plants by industries, through the carelessness of their employees, should be settled for upon a fair basis. Can the railroad be expected to give heed to the claims of others if a deaf ear is turned to its own legitimate claims?

The cars of a railroad are its own and do not belong to any other railroad. They are one of the chief means whereby it is able to care for its patrons. Industries should respect the ownership of equipment, and are not in any way justified in loading the cars of a railroad out over another line, no matter how badly the cars of the second road may be needed for shipments to points via that line or local to it.

The interests of railroads and industries are identical and they are both absolutely dependent upon each other.

No policy which is harmful to the one and favorable to the other can be pursued through a term of years without becoming unfavorable to both. It is ultimately an advantage to an industry for railroad companies to carry on their business profitably in order that they may keep abreast of the times and afford such service as the rapidly increasing industrial development in this country demands. We have already seen the vast amount which the railroad companies of this country distribute each year in the form of purchases of material, wages and salaries. Are not the interests of so valuable a customer worthy of the consideration and protection of those who share so largely in its disbursements? On the other hand if the railroad desires to see its business increase, and consequently its profits, it must for its part afford every opportunity for industries to market their products and expand their business. It requires no gigantic intellect to see that the interests of the railroad and industries are so interwoven that a blow at one is a blow at the other. We need, in this country, a keener realization of this principle and the promulgation of the doctrine: "Co-operation between transportation and industrial interests."

## The Carnegie Institute at Pittsburgh

Andrew Carnegie's $5,000,000 gift to the people of Pittsburgh, in the shape of the enlarged Carnegie Institute, galleries and library, at Schenley Park, will be ready to turn over to the institute board some time in October, but on account of the months it will take to install the furnishings, sculptures and equipment of the museum and art galleries the dedication exercises will not occur until next April. The building is remarkable in many particulars. For one thing, it is said to have called for the largest contract of marble ever made, amounting to something like $700,000, or over twice as much as the previous largest contract—that for the Frick Building, $325,000. The building contains 20,000 acres of floor space, and this marble will furnish much of the wainscoting, floors and stairways. The heating contract is another notable one, it being said to be the largest single one ever let, the total aggregating $700,000 in round figures. The electrical work and the material for the twenty bronze doors pile up the cost of finishing to a still higher total. The skylights, which extend for acres and are mostly of wire glass, will cost $120,000. The entire structure is fireproof. Where the floors are not of marble they are cement, covered with rubber tiling, of which there is more than 100,000 sq. ft. It is not unlikely that the total cost of enlarging and rebuilding the institute will amount to considerably over the $5,000,000. The library facilities have been improved by the addition of a seven-story stack room, said to have the largest capacity for books of any one building in the world. The sides of the stacks are almost entirely of glass, and it stands between two courts, giving it an abundance of light. All parts of it will be connected with the reading and reference rooms of the library by pneumatic tubes and automatic book carriers. Alden & Harlow are the architects of the building.

The new Graduate School of Applied Science of Harvard University will begin its first year this fall. The income of $2,000,000 from the estate of Gordon McKay will be available for the purposes of the school, and this will be augmented later when the whole $4,000,000 or $5,000,000 of the estate shall have been received. The new school will not supplant the Lawrence Scientific School for the present, the opportunity remaining open to those students already enrolled in that department of the university to complete their courses.

For pressed fits a difference in size of from 0.002 to 0.003 in. should be allowed for each inch in diameter. The required pressure in tons will be the allowance in thousandths of an inch, multiplied by the diameter in inches, and by 1½. With pieces of very large size it is apparent that this formula calls for pressures of very great magnitude. In such cases a total allowance of 0.010 in. would usually suffice and would result in keeping the pressure down to convenient limits.

## San Francisco's Iron and Steel Interests.

SAN FRANCISCO, August 25, 1906.—The débris is being cleared away a little faster from the streets, though only a few even close to the water front are yet clear, while some are still altogether impassable. California, Pine, Front, Sansome and Battery streets, north of Market, will never again be so devoted to the wholesale trade as they once were. California street will be a great financial center, with banks, office buildings, &c., and the wholesale trade will gradually move south of Market and as near the railroad as possible. Market and California streets, with the space in between, will be the section of office buildings. Here the Kohl Building is being fitted up again; the Safe Deposit Building opposite will be raised, and the Merchants' Exchange will spend $700,000 in fixing up its fine building. The Bank of California will rise at Sansome and California streets. The Alaska Commercial Company will have a $500,000 building in the place of the one that has been destroyed. A fine building will go up on the Firemen's Fund lot, while the New York Mutual Building is being made ready for occupancy again.

All the above named are on a single block or so on California street, and merely give an idea of what the work of restoration will be. It was in this section and on the other side of Market street that the headquarters of the hardware and iron trade were located and where the offices of Eastern iron and steel manufacturers, as well as that of the Union Iron Works, were to be found. For instance, the Pacific Steel & Wire Company, the American Steel & Wire Company and Baker & Hamilton were on Pine street; Holbrook, Merrill & Stetson and W. W. Montague & Cowan were on Market street, not far away, and Dunham, Carrigan & Hayden were close by. Now they are all, or soon will be, close to the railroad. The Pacific Hardware & Steel Company went before the fire, followed after by Baker & Hamilton, Dunham, Carrigan & Hayden, Holbrook, Merrill & Stetson, and others. In a year from now there will be a big wholesale section here composed of wood, corrugated iron and brick stores, to be followed later by structures of a more pretentious and enduring character.

There has been a very good business in progress, with an especially great demand for building hardware. The local houses have had all they could do to supply the contractors and builders in this city. There will be large quantities of structural steel brought here both by land and sea, but in no case will there be any such quantity as has been suggested. The total is estimated at the outset by competent engineers as not to exceed 250,000 tons. An immense quantity of cement will be needed. The imports of both steel and cement so far have been light.

The city is full of scrap iron and steel, but not to anything like the amount that has been reported. Scrap steel brings $9 per ton of 2240 lb. in large lots. There is enough scrap iron and steel to supply this market for many a day. Of course much will be sold to be shipped outside. The San Francisco market has been taking about 30,000 tons a year, which in ordinary years has brought very good prices. The foundries all report a good demand for their product, and of mining machinery in particular there have been quite large sales. There is an active trade in sheet iron pipe, though one of the great factories was wiped out altogether by the fire. J. O. L.

**Southern Pennsylvania Ore Mining.**—There is a possibility that iron ore mining in the northern part of York County, Pa., may be renewed on an extensive scale. The properties of the old York County Iron Company will be sold with all leases, etc., by a trustee to be named by the courts. Hematite ore is being produced for various Pennsylvania interests in a number of places. The Mt. Holly Brick & Clay Company has opened several shafts near Mt. Holly Springs, and the Juniata Furnace & Foundry Company is working banks near Dillsburg. The banks have been practically idle for several years, although 125 years ago they were actively worked and there were half a dozen furnaces in the Cumberland valley early in the last century.

# The Convict Labor Question.

WASHINGTON, D. C., August 31, 1906.—The publication by the Commissioner of Labor of a report of an investigation into the extent and character of the convict-made output of hollow ware, stoves, furniture, clothing and many other kinds of merchandise has given a very decided impetus to the movement that has progressed somewhat sluggishly for a number of years having for its object the passage of a national law designed to put an end to this form of competition with the products of free labor.

### Pending Convict Labor Bill.

In the closing days of the last session of Congress the House Committee on Labor reported a bill which attracted very little attention at the time owing to the confusion incident to the adjournment. The measure was introduced by Representative Hunt of Missouri, and in the form as reported to the House provided as follows:

That all goods, wares and merchandise manufactured wholly or in part by convict labor, or in any prison or reformatory, transported into any State or Territory or remaining therein for use, consumption, sale or storage, shall, upon arrival and delivery in such State or Territory, be subject to the operation and effect of the laws of such State or Territory to the same extent and in the same manner as though such goods, wares and merchandise had been manufactured in such State or Territory, and shall not be exempt therefrom by reason of being introduced in original packages or otherwise.

It will be observed that this bill differs materially from the measure brought forward in previous Congresses prohibiting the interstate transportation of convict made goods. Some question has arisen in the minds of the best lawyers in the House and Senate as to whether the constitutional authority of Congress to regulate interstate commerce may with propriety be exercised to the extent of absolutely prohibiting the transportation of goods from one State to another. The Hunt bill, however, is not open to this objection.

### Value of Prison Products.

The report of the Bureau of Labor shows a total value of all goods produced by convict labor during the past year of $34,276,205, but it is estimated that the value of "free" goods displaced was much greater, owing to the extremely low prices realized for the convict products. The total value of stoves and hollow ware produced during the year was $825,427, but more than a million dollars' worth of "free" foundry products were thus displaced. Hollow ware is made for sale in seven State penitentiaries, as follows:

Indiana: 2358 tons of hollow ware, ground and unground; value, $129,690; convicts employed, 225.

Illinois: 1,392,000 pieces plain and enameled hollow ware; value, $100,000; convicts, 188.

Ohio: 1200 tons of pots, kettles and iron cuspidors; value, $100,000; convicts, 140.

Tennessee: No statement of volume of output; value, $48,300; convicts, 40.

Maryland: 214,500 pieces iron castings of hollow ware for stoves, ranges, furnaces and stove furniture; value, $112,837.50; convicts, 43.

Alabama: Hollow ware, kettles, pots, pans, &c., dog irons, grate frames; value, $75,000; convicts, 56.

Kentucky: Pots, pans, kettles, skillets, &c.; value, $34,000; convicts, 47.

Total value, $599,427.50; convicts, 769.

In addition to the hollow ware reported from Tennessee the prison in that State made 6000 cook stoves and 8000 heating stoves, having an aggregate value of $88,000, employing 95 convicts in their production. The Oregon State penitentiary made last year 11,151 stoves and ranges, valued at $138,000, 119 convicts being employed at the work.

The production of stoves in prisons has decreased in recent years, but there has been a more than proportionate increase in the production of hollow ware. It is the unanimous testimony of manufacturers and jobbers consulted that the manufacture of certain articles of hollow-ware and certain grades of a much larger line, has been entirely absorbed by prisons. Formerly stove manufacturers made the utensils that usually went with a stove. The cast iron articles that went to make up the "trimmings" of a cook stove consisted of two pots, two skillets, two griddles, one heater, one gridiron, one tea kettle, a total of nine pieces. There was some differentiation in this industry 35 years ago, even while practically all stove manufacturers still made hollow ware. That is to say, there were a few plants that made hollow ware alone, as long ago as 1870. This differentiation continued and was encouraged by the fact that many stoves were sold without "sets" or "trimmings," that hollow ware called for large storage room, and that there was a certain amount of trade in pots and kettles entirely apart from the sale of stoves. It was not, however, until the prison-made hollow ware had appeared in considerable quantities that stove manufacturers began generally to abandon the production of these articles. The introduction of stamped enameled ware and of high-class enameled kettles came in to share this market to the full extent of the increase in population, and the total absorption of the business by the prisons began.

### Commercial Concerns Forced Out.

The statement of a Baltimore manufacturer was to the effect that his people continued the making of hollow ware until the prison articles during the hard times sold at a price so little above their actual labor cost that they could stand it no longer. They abandoned this part of their business and buy hollow ware of the prison contractors to supply their trade, thus being forced to become jobbers of the lines of goods they formerly made. As a result of this, they try as far as possible to sell stoves without "sets" or "fixtures," as the trimmings are called by this firm. When making its own hollow ware, this firm had certain shapes and styles of cooking utensils that pleased its customers, and, as the trade still demanded these shapes, the firm was obliged to send its patterns or "flasks" to the prison and then buy from the contractors the hollow ware made from its own patterns.

Another firm in the same locality that had abandoned the manufacture not only of hollow ware, but of the grade of stoves made in prisons, furnished the following statement: "We have been compelled to discontinue the manufacture of Southern stoves and stove hollow ware, owing to our being unable to compete with the convict concerns manufacturing these lines. We estimate the loss of business sustained in the above at about $60,000 to $70,000 per year. Certain articles in the above line we are now purchasing from the convict-labor concerns, owing to their being able to manufacture the goods cheaper than we can."

Prison-made stoves are not now the menace to manufacturers employing free labor that they were several years ago. Convict-made stoves were driven out of the Maryland prison by act of the Legislature. They are now made in but two prisons—at Nashville, Tenn., and Salem, Ore.

### Miscellaneous Products.

In addition to stove hollow ware and stoves, the Commissioner of Labor enumerates no less than 80 classes of merchandise now produced by the prisons, including agricultural hand tools, $562,683; blacksmithing and wheelwrighting, $53,652; brass goods, $39,267; building trades work by contract, $1,084,831; carriages and wagons, $131,891; castings, machinery and repairs, $220,273; coke, $177,865; enameled ware, $84,340; iron and steel bolts, nuts, &c., $170,000; iron and steel chains, $67,860; coppersmithing and sheet iron working, $32,865, and wire goods, $85,607.

The serious aspect of this development, from the standpoint of the manufacturer whose trade is not now affected, is the fact that it is the policy of the administration of the largest penitentiaries of the country to diversify the output upon the fallacious idea that it will be less injurious to free labor to manufacture a relatively small quantity of a great many different kinds of goods than to concentrate production upon a few staple lines. The trouble with this theory is that owing to the large and constantly increasing number of convicts in the penitentiaries and the use therein of the latest types of improved machinery, taken in connection with the concerted movement of all the penitentiaries in the several States, the output of any one article which the majority of the prisons may undertake to manufacture will be so great as to have a serious effect upon the products of free labor.

W. L. C.

## PERSONAL.

George Howe has opened an office at 150 Nassau street, New York City, to act as consulting engineer, contractor and purchasing agent and general New York representative for out-of-town electric plants. He has had extended experience in various lines of work, and has lately been general manager of the Metropolitan Engineering Company.

John R. Hastings, for some years vice-president of the Sharon Steel Hoop Company, Sharon, Pa., but who sold his interest some time ago, is now connected with the West Leechburg Steel Company, Farmers' Bank Building, Pittsburgh.

W. H. Whiteside, president of the Allis-Chalmers Company, Milwaukee, Wis., returned August 22 from a two months' combined business and pleasure tour of England, France, Germany and Switzerland, in the course of which he inspected various large manufacturing industries. Among them he visited the plants of the leading English steam turbine builders, as American rights for building Parsons steam turbines for marine and land use are enjoyed by the Allis-Chalmers Company.

S. T. Wellman, president of the Wellman-Seaver-Morgan Company, Cleveland, Ohio, has returned from a three months' trip to Japan.

H. A. Sedgwick, formerly superintendent of Gay & Ward, Incorporated, Athol, Mass., and later connected with the Union Twist Drill Company of that city, has become superintendent of the Madison Kipp Lubricator Company, Madison, Wis.

James W. Sederquist, 8 Oliver street, Boston, Mass., has been appointed New England sales agent for the Lackawanna Steel Company, Buffalo, N. Y. The product of this company consists of rails, billets, blooms, beams, channels, angles, bars, sheets, sheared and universal plates, etc.

George B. Brown, until recently general superintendent of the Carpenter Steel Company, Reading, Pa., has accepted the position of superintendent of the crucible department of the Bethlehem Steel Company, South Bethlehem, Pa.

Edwin Merrick, roller on the 28-in. mill of the Eastern Steel Company, Pottsville, Pa., has been appointed day superintendent, vice Thos. E. Evans, resigned. William B. Hause, chief inspector, has been appointed night superintendent, vice Harry A. Rowley, who has resigned to become superintendent of the Northern Steel Company, Collingwood, Canada. J. Calvin Francis succeeds Mr. Hause as chief inspector.

J. G. Coleman, for a number of years secretary of the Wisconsin Malleable Iron Company of Milwaukee, has retired from active business, and is succeeded as secretary by W. P. Westenberg, who has been superintendent at the plant.

James B. Oliver, president of the Oliver Iron & Steel Company, Pittsburgh, has sailed for Europe.

W. A. Hall, formerly connected with large electric interests in Cincinnati and Boston, has associated himself with the Allis-Chalmers Company as sales agent, with offices in the First National Bank Building, Cincinnati.

Benjamin Nicoll, of B. Nicoll & Co., New York, is expected back from Europe next week. He spent most of the time at Aix-les-Bains.

The Adirondack Murray Memorial Association has been formed to perpetuate the memory of Mr. Murray, to erect a suitable monument at his burial place, to preserve the homestead at Guilford, to assist in the education of his daughters and to promote the sale of his books. The trustees of the association are W. H. Merrill of the Boston *Herald*, Col. A. A. Pope, of Hartford, Rev. Dwight L. Hillis of Brooklyn, Edw. Griswold and C. H. Scholey of Guilford, Conn.; M. J. Hapgood of Peru, Vt.; James H. Cutler of Washington, D. C.; Harry V. Radford of *Woods and Waters*, and M. F. Westover of Schenectady, N. Y. Mr. Griswold is president, Mr. Hapgood, treasurer, and Mr. Westover, secretary. Membership is permanent, without annual dues. The payment of $2 makes one a regular member, $5 a special member, and $25, or any larger sum the person may be disposed to give, a patron. Every friend and admirer of the great evangelist of outdoor life is invited to send his name to the treasurer, or other officer of the association, together with the sum necessary to admit him to the class of membership desired.

## OBITUARY.

EDMUND L. PARKER, Worcester, Mass., a member and for some years head of the firm of John L. Parker & Co., died recently, aged 59 years. He was a native of Cohasset, Mass. After some experience in other lines of business he went to Worcester in 1876 to become associated with his brother, John L., in the manufacture of ferrules and other sheet metal goods. After the death of his brother 10 years ago Mr. Parker conducted the business until 1895, when he retired, being succeeded by a corporation, the John L. Parker Company. He was prominent in municipal affairs, having served in the common council and board of aldermen, and was a member of St. John's Episcopal Church, of the Masonic bodies, and of the Odd Fellows. He leaves a widow and a son.

E. T. HANNAM, whose death was noticed in last week's issue, was the inventor of the Atlas water tube boiler, manufactured by the Atlas Engine Works, Indianapolis, Ind. He was not general sales agent of the Atlas Engine Works, but was assistant manager of sales of the water tube boiler department, a position to which he had recently been promoted. He was just entering upon his new duties when he was stricken down. His death is a distinct loss to the company.

J. N. SCHIFFLER, Milwaukee, Wis., secretary-treasurer of the Western Hardware & Mfg. Company, manufacturer of iron bedsteads, died August 28, from injuries received in a runaway accident.

### Labor Notes.

A permanent injunction restraining the striking molders from interfering with or molesting the men employed in the foundry of the American Brake Shoe & Foundry Company, Chicago Heights, Ill., was issued in Chicago last week by Judge Bethea. Violence and disorder have marked the progress of this strike. The court's decision is in part as follows: "Picketing at a general strike which produces intimidation is a violation of the law. A peaceful combination of a number of men to prevent this complainant from hiring men also would be a violation. One man can produce intimidation by the use of violence, and thus violate the law; a number of men may combine to do it peacefully, and that would still be a violation of the law, because by the combination a power is brought to life which would not exist if there was but one man. A peaceful strike is of course proper. Any man may quit his job and no one can compel him to work, even though he violates a contract. Still, any other man can take his job. That may be contrary to organized labor, and it may be a proper idea, but I am not discussing that part of the situation. Some think there should be another commandment, 'Thou shalt not take thy neighbor's job,' but that is not law."

Justice Stafford of the District Supreme Court, Washington, D. C., has decided that a boycott against a baker by labor unions and their sympathizers is not illegal. The baker had applied for an injunction, alleging that he was being harassed by a systematic boycott.

The strike at the works of the Lebanon Valley Iron Company's plant, Lebanon, Pa., has been called off by the men.

The Block-Pollak Iron Company, Chemical building, St. Louis, has purchased from the United Railways Company of that city 10,000 tons of old material, consisting mainly of rails and track scrap. The transaction was consummated August 25.

# NEWS OF THE WORKS.

### Iron and Steel.

The Vanadium Steel Company, Pittsburgh, with a capital of $300,000, has applied for a charter, and will build a steel plant near Sewickley, Pa., for the manufacture of vanadium steel.

It is reported, but not officially confirmed, that the United States Steel Corporation will build a large ordnance plant in the vicinity of Youngstown, Ohio.

The Niles Iron & Sheet Company, Niles, Ohio, increased its capital stock for the purpose of securing new equipment in the way of boilers, &c. The company is not putting in a tinning plant.

The contract for several of the buildings for the new plant of the Pittsburgh-Hickson Company, at Butler, Pa., has been awarded. The buildings will be used as a tube mill for the manufacture of iron bed frames, and will be built of cement. The plant will be equipped with the latest labor saving machinery.

The Ivanhoe Furnace Company, Ivanhoe, Va., started up its blast furnace September 1. The furnace starts on foundry iron and in a month or two will go to Bessemer iron. The company has gone to a great deal of expense in repairing the furnace and has practically made it a new furnace. The blowing power has been almost doubled. The product of the furnace is expected to be about 60 tons a day.

The Earlston Furnace, Earlston, Pa., blew out for relining August 14.

The Adrian Furnace, Du Bois, Pa., was blown in August 31, after having been out for the entire month for relining.

The Parkesburg Iron Works, Parkesburg, Pa., has resumed operations after a short suspension.

Temple Furnace, at Temple, Pa., has been blown in by the Temple Iron Company. Lecsport Furnace will start as soon as some repairs are made.

The West Leechburg Steel Company, Pittsburgh, works at West Leechburg, Pa., maker of hot and cold rolled strip steel, is adding two 25-ton open hearth furnaces to its plant, and may possibly add a bar mill later on. The furnaces are being built by William Swindell & Brother, engineers and contractors, German National Bank Building, Pittsburgh, while the steel building to contain them, which is 120 x 240 feet, is being built by the American Bridge Company.

Claire Furnace of the Claire Furnace Company, at Sharpsville, Pa., which has been idle for some time undergoing repairs, blew in on September 4.

The new Bessemer plant of the Youngstown Sheet & Tube Company, Youngstown, Ohio, continues to operate very satisfactorily, and has been put on double turn.

The Wheeling Steel & Iron Company, Wheeling, W. Va., has shut down its plate mill department in order to allow extensive repairs to be made.

### General Machinery.

The R. D. Nuttall Company, Pittsburgh, Pa., has ordered equipment for its small gear department, particularly for the manufacture of automobile gears, which will practically double the output of bevels and worm gearing.

The Grupe Drier & Boiler Company, Davenport, Iowa, has been incorporated to manufacture and deal in driers and boilers and to do general structural and plate iron work. The company has an authorized capital stock of $50,000, and its incorporators are: President and treasurer, John Grupe; vice-president, D. Grupe; secretary, Richard Bojens.

The Eberhardt Brothers Machine Company, Newark, N. J., is building an addition to its assembling room, which will enable it to handle about double the present output.

William Bibby, Littleton, Ala., is in the market for a crusher for crushing fire clay.

The Bartlett-Tewksbury Machinery Mfg. Company, Birmingham, Ala., is being reorganized with capital increased to $125,000. The company has broken ground for the erection of three buildings at East Birmingham, all constructed of steel, with reinforced concrete walls and roof. The foundry will be 100 x 225 ft.; machine shop, 65 x 150 ft., and office building 35 x 45 ft. The company will generate its own electricity, the generator being directly connected to engine. All machines in both foundry and machine shop will be motor driven, no shafting, belts or pulleys being used. Lines of manufacture will be sugar mill machinery, engines and steel castings. The company hopes to have all buildings constructed and machinery installed to commence manufacturing by January 1.

The Corinth Engine & Boiler Works, Corinth, Miss., has bought the building of three stories adjacent to its works, occupied by the Alcon Woolen Mfg. Company, which it will rearrange and fit up for office, stock and store room. This will give the company extended facilities for carrying on the mill supply department of its business. It contemplates the erection of a new boiler shop in the near future. The company has just filled an order for a carload of gang edgers for Portland, Ore.

The Traylor Engineering Company, 114-118 Liberty street, New York, which has recently begun the manufacture of fuel briquetting machinery and the installation of fuel briquetting plants under the Mashek system of briquetting, described in *The Iron Age* of April 19, 1906, has already received several important orders. Three of these orders, for which the machinery is now being built at the company's works at Allentown, Pa., are, respectively, for Edward B. Arnold, 1 Broadway, New York, for his plant at the foot of West Forty-eighth street; the Semet-Solvay Company, for its Detroit plant, and the Montreal Light, Heat & Power Company, Montreal, Canada. These plants represent three interesting variations of the briquetting industry. Mr. Arnold is a large coal dealer. His plant is to make briquettes for domestic consumption, using the small sizes of anthracite coal. The Semet-Solvay Company will make fuel for domestic use from the coke breeze, which is a waste product from the Solvay by-product coking ovens, and the Montreal Light, Heat & Power Company will make a smokeless briquette for family use from coke breeze resulting from gas making, using coal tar pitch as a binder.

C. A. Turner, machinery supply dealer, Pittsburgh, will be succeeded by a corporation with a capital of $100,000, and to be known as C. A. Turner, Incorporated. The new company will carry a much larger stock of supplies for mills, mines and railways than is now carried by C. A. Turner.

The International Railway Company, Buffalo, N. Y., which controls the urban and suburban electric railway lines in that city and vicinity, will soon commence the construction of a car building plant and repair shop at Military road and the New York Central Belt Line. Modern car building equipment will be installed.

The Frank Mossberg Company, Attleboro, Mass., manufacturer of special machinery, stampings and tools, has taken a building adjacent to its plant, adding more than 10,000 square feet of floor space, which will increase the capacity of the works some 50 per cent. Some new machinery will be required, but the new space will be used principally for spreading out existing equipment, which has become crowded in the rapid increase of the company's business.

The Union Iron & Brass Works, El Paso, Texas, is building a machine shop, brass foundry and blacksmith shop at Park avenue and Sixth street, which will soon be ready for operation. The company will make machine parts and castings in brass and special fixtures and do machine repair work. The plant is under the management of J. G. House and T. C. Lind, connected with whom is Oliver Dutton, who has had long experience in gas engine, electric elevator and pumping plant work.

The Indiana Union Traction Company, Anderson, Ind., is having plans prepared for new buildings which will include a main shop, 80 x 480 feet, one-half two stories high with a wing, 80 x 324 feet. The buildings will be of brick, steel and cement and will be steam heated and lighted by electricity. It is also the intention to erect a car barn, 80 x 350 feet. The entire cost of the work is estimated at $300,000.

The Owensboro Forging Company's plant, Owensboro, Ky., has been sold at auction to Henry Berry, one of the stockholders, for $25,000. It is understood that an attempt will be made to place the plant in operation.

The Solid Steel Tool & Forge Company, Brackenridge, Pa., is now actively at work in its plant, where a large variety of products are made. In addition to doing drop forging, helve hammer work, eccentric roll forging, bending, upsetting, brass forging, hot sawing, drilling, thread cutting, grinding and tempering, the company manufactures a wide variety of car forgings, railroad track tools, general forgings, nut locks, &c.

### Power Plant Equipment.

The Union Stock Yard & Transit Company, Chicago, is building a new power house at the Union Stock Yards, which will be 136 x 138 ft., one story and basement, brick, concrete and steel construction, and cost $200,000. Contracts for the equipment have been let as follows: 1000-kw. engines, Allis-Chalmers Company, Milwaukee; 1000-kw. generators, Crocker-Wheeler Company, Ampere, N. J.; three 350-hp. boilers, Babcock & Wilcox Company, New York. The South Halsted Street Iron Works have the structural steel contract, and the Weber Steel Concrete Chimney Company have the contract for a reinforced concrete chimney 11 ft. in diameter and 180 ft. high. Sargent & Lundy, Chicago, are the architects and engineers.

The Atlantic Shore Line Railway, Portsmouth, N. H., has an option on the power property of the Dover Gas Light Company, Dover, N. H., through the National Heat, Light & Power Company, owner of the Atlantic Shore Line property. It is understood that the power will be developed if the option results in a purchase.

The Briggs Machinery Company, Pittsburgh, has sold a 100-hp. Nash gas engine to the Cresent Machine Company, Leetonia, Ohio; 250-light direct connected gas engine and generator set, Hotel May, Monessen, Pa., and two 125-hp. Nash gas engines, Monessen Water Works.

The Chase Pulley Company, Providence, R. I., has abandoned the manufacture of pulleys, and will henceforth confine its efforts to the manufacture of gasoline engines, under the name of the Chase Engine Company.

The La Crosse Boiler Company, La Crosse, Wis., has let contract for the erection of an addition to its plant, 46 x 150 ft., which will be ready for operation by spring.

The town of Eagle River, Wis., is negotiating for the purchase of an electric lighting plant to cost about $50,000.

The Mayor of Mobile, Ala., will receive bids until October 1 for a 430-kw. electric plant.

**Foundries.**

The Watervliet Foundry & Machine Company, Watervliet N. Y., recently incorporated with a capital stock of $60,000, has purchased 4 acres of ground on the Delaware & Hudson Railroad tracks, upon which it will erect a building 75 x 150 ft., contract for which has been awarded the Berlin Construction Company. The plant will be equipped with modern machinery, including a Niles-Bement-Pond 20-ton electric traveling crane. The product will be heavy machinery castings. Harry L. Kelley is president; J. V. Hemstreet, vice-president, and George B. Kelley, secretary and treasurer.

The Begg Pipe & Foundry Company, Birmingham, Ala., of which the sole owners are Hamilton T. Begg and his two sons, Geo. W. and J. P. Begg, has purchased ground 150 x 400 ft. at North Birmingham, on which it has erected a building 150 x 175 ft. The company expects to have all necessary planers, drill presses, blowers, with engine and boilers installed so as to start making soil pipe and fittings early in October.

Work has been started on the new plant of the United States Cast Iron Pipe & Foundry Company at Scottdale, Pa.

An iron and brass foundry will be erected at Houghton, Mich., by the Calumet & Hecla Mining Company for the purpose of providing the company with castings, which have heretofore been purchased in the open market. The building will be 96 x 98 ft., with an extension from the middle of the rear side for the two cupolas and the charging floor. The main bay or casting floor will have a width of 50 ft. and will be commanded by a 20-ton crane. The cleaning room will be 24 x 80 ft., and a space 16 x 24 ft. in this section will be used for office purposes. A trolley crane with a capacity of 3 tons will serve the cleaning floor.

The Gadsden Foundry, Gadsden, Ala., is erecting a new building, 50 ft. square, which will be equipped with modern machinery. Within a few weeks the company expects to have it in operation.

The Nortmann-Duffke Foundry Company, Milwaukee, Wis., has recently increased its capital stock from $20,000 to $50,000.

**Fires.**

The plant of the American Can Company at St. Paul, Minn., was destroyed by fire August 28, the loss being $200,000.

The Fulton Iron Works, San Francisco, Cal., were damaged $30,000 by fire on August 31.

The forge department of the Maple Leaf Harvest Tool Works, Tilsonburg, Ont., was destroyed by fire August 28.

The McKinnon Iron Works, Ashtabula, Ohio, were destroyed by fire last week, the loss being about $40,000.

**Hardware.**

The Wire Goods Mfg. Company, Oklahoma City, Okla., manufacturer of farm and ornamental fencing, lawn gates, railing, window guards, &c., is contemplating the erection of a large factory. Plans are still in an embryonic stage.

The Ham & Nott Company, Limited, manufacturer of refrigerators, screen doors and windows, woven wire mattresses, &c., Brantford, Canada, is making additions to and increasing its shop capacity to the extent of about 20 per cent. The company has purchased a new gas engine to be used as auxiliary to the steam plant from the Goold, Shapley & Muir Company; one new band re-saw, one molder and borer from John Ballantine & Co., Preston, and a new shaving exhaust from Sheldon & Sheldon, Galt.

At a meeting of the creditors of the Rockford Bolt Works of Rockford, Ill., held August 22 in the office of the Republic Iron & Steel Company, Chicago, a report of the condition of business at that time showed assets $49,721.64 and liabilities $31,383.74. A motion was passed that the liquidating trustees proceed to liquidate in fact and sell off the stock on hand as fast as possible and advertise the machinery for sale not later than September 15 to October 15, 1906. It was also voted that the liquidating trustees be instructed not to solicit any further business or accept any orders except those which can be made from or shipped from stock on hand.

The American Bell & Foundry Company, manufacturer of church, school, fire alarm and farm bells and steel land rollers, is erecting an addition to its plant, 50 x 100 ft., to take care of the increasing demand.

The Stimpson Scale & Mfg. Company, recently organized, has just commenced operations in the plant formerly owned by the Hall-Carr Mfg. Company, Northville, Mich. The company's capital stock is $110,000 paid in, W. F. Stimpson being manager of the plant. The officers are F. S. Harmon, president; L. L. Brooks, vice-president; C. C. Yerkes, secretary, and Edward Gay, treasurer.

The William Schollhorn Company, manufacturer of Bernard's patent pliers, cutting nippers, belt and ticket punches, bolt clippers, &c., New Haven, Conn., is about completing important additions to its plant and manufacturing facilities. More than $40,000 has been expended in the improvements.

The Hamilton Life Preserver Company has been organized at Springfield, Mass., to manufacture a new life preserver. The company has not yet decided where it will locate its factory. W. E. Bennett of the Bennett Paper Box Company, Springfield, is the treasurer.

George A. Pierce has resigned as treasurer and director of the Holyoke Belting Company, Holyoke, Mass., and has been succeeded by Harry E Hanks, South Hadley Falls, Mass. Mr. Pierce's stock has been purchased by T. W. Kirkland, president of the company, who will take full charge of the business.

The Niagara Cordage Company, Buffalo, is building a new plant at North Tonawanda, N. Y. The main factory building will be 70 x 300 ft., of cement block construction, and will be equipped with the latest type of machinery for the manufacture of rope and twines.

Columbus Bolt Works, Columbus, Ohio, has contracted for the erection of a warehouse, 60 x 95 ft., four stories and basement. The building will be of reinforced concrete and will be strong enough to carry a load of 1000 lb. to the square foot on each floor. No wood will be used in the construction except in window frames and sash.

**Miscellaneous.**

The Winchester Rock & Brick Company, 79 Milk street, Boston, is to erect a large plant at Woburn, Mass., consisting of a stone crushing house, power house and brick factory. A railroad half a mile long will be built, to be operated by steam, connecting the property with the Boston & Maine Railroad. The company will put in five large vibratory crushers and all the other necessary machinery to crush 1000 tons of trap rock a day, a sand lime brick plant which will produce 20,000 bricks a day, and 1000-hp. boilers and a 750-hp. engine, the contract for which has been let to the Allis-Chalmers Company.

The plant of the Anchor Color & Gum Works, Dighton, Mass., the property of the Arnold-Hoffman Company, Providence, R. I., which was recently destroyed by fire, will be rebuilt immediately.

The Northampton Talc Company, Northampton, Mass., is adapting the old Lamb wire mill in that place for the grinding of talc, which will be mined from a tract of land near the village of West Cummington, Mass. The company is incorporated under the laws of Maine with authorized capital stock of $100,000.

The Marion Mfg. Company, Marion, Ohio, manufacturer of engines, threshers, &c., has increased its capital stock from $400,000 to $500,000, the increased capital to be used for enlarging and extending its business. The company has just patented a new rotary thresher, which it will put on the market.

The plant of the Neafie & Levy Ship & Engine Building Company, Philadelphia, Pa., is to be sold at auction September 25. The plant is to be sold as a going concern.

The Galveston Launch & Motor Company, Galveston, Texas, recently incorporated with a capital stock of $10,000, has purchased the shipbuilding plant of C. L. Mayhew, which it will use for the building of modern launches of all grades and sizes. It is the intention to improve and enlarge the plant. C. L. Mayhew is president; R. T. Bodine, vice-president, and C. C. Lavery, secretary.

The Holland Furnace Association, Holland, Mich., has been organized with a capital stock of $50,000, and has secured a site where it will erect a plant for the manufacture of furnaces under patents held by J. P. Kolla. Plans are being prepared for the new buildings, which are expected to be ready for operation by October 1. Aaron Visscher is president; William H. Beach, vice-president; C. McLean, secretary, and G. C. Bowman, treasurer and manager. These officers, with Jacob E. Van Putten, A. B. Landwehr and J. P. Kolla, comprise the Board of Directors.

The Walter A. Zelnicker Supply Company, St. Louis, Mo., has purchased all the assets of the Holland Palace Car Company of Indianapolis, Ind., included in which are the Holland sleeping car patents and the two sleeping cars Theodore and Francis, which were formerly operated out of Columbus, Ohio. These cars, which are parlor cars in the day time and sleepers at night, are equipped with 600 hp. Westinghouse motors, and are capable of making 70 miles per hour. It has been said that these two cars are the finest interurban cars built. They were used less than three months and are from the shops of the Harlan-Hollingsworth Company.

The Carpenter shops of the Baltimore & Ohio Railroad Company, at Parkersburg, W. Va., were recently destroyed by fire, causing a loss of $50,000. The shops will be rebuilt.

E. M. Doyle, formerly with the Pittsburgh Supply Company, has opened an office in the Fulton Building, Pittsburgh, and will engage in the mill, mine and railroad supply business under the name of E. M. Doyle & Co.

The J. L. Mott Iron Company, which recently erected a new plant at Trenton, N. J., has let contract for the construction of three additional buildings, which will largely increase the capacity.

# The Iron and Metal Trades

The excitement in the Pig Iron markets has quieted down somewhat, although the danger of a runaway market has not disappeared and is regarded in some quarters as imminent this fall, particularly in Foundry Iron. The action of one leading producer in the South in selling freely, for forward delivery at close to $15, Birmingham, for No. 2, has had a quieting effect. In a number of the principal distributing markets both the volume and the urgency of the inquiries for forward delivery are less pronounced, but there is some eagerness to cover immediate requirements. Gaps in deliveries on contracts at old prices have become somewhat frequent, and cause some high prices, which, however, are hardly a criterion of the market. At such spot prices Foreign Pig Iron could be imported into such ports as Boston at a profit, but at the present range of values for forward delivery at home and abroad business is not practicable even at exposed points.

Steel makers view the rise in Pig Iron more complacently. Some of the largest interests have reached their full converting capacity anyhow, and with them it is a question of supplying the finishing mills with Steel rather than of feeding the Steel plants with Pig Iron.

There is some doubt as to whether we shall get down enough Ore during the season for the requirements of the winter and early spring, and the Coke supply, too, is causing uneasiness. In both cases the root of the evil lies in the shortage of labor, which is marked in nearly all the sections and in nearly all branches of the industries. Thus far the railroads have handled the transportation admirably, but here, too, the pressure of the enormous volume of business being done is beginning to find its reflection in hitches.

The week does not record many transactions of special magnitude, or of particular significance. The Rail makers have added to their order books for 1906 and 1907 delivery 10,000 tons additional for the Chicago & Northwestern, and 30,000 tons for the Southern Railway. The Steel Corporation has just ordered over 3000 steel cars for its different roads, and has accepted bids for a number of additional locomotives.

In the Plate trade an interesting order has been that for 8000 lineal ft. of ⅜-in. Plates for the lining of the double tunnel of the Michigan Central road under the Detroit River.

The price policy of the leading interests in Finished Iron and Steel is again being put to the test. Premiums over official prices are beginning to crop up in Bars, Wire and Sheets, and reports that advances are imminent are in circulation. While no assurances are given by the leaders, it is regarded as certain that a very conservative course will be pursued.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | Sept. 5, 1906. | Aug. 29, 1906. | Aug. 8, 1906. | Sept. 6, 1905. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | **$20.25** | $19.75 | $18.75 | $16.25 |
| Foundry No. 2, Southern, Cincinnati | **18.50** | 18.00 | 17.00 | 14.25 |
| Foundry No. 2, Local, Chicago | **19.75** | 19.50 | 18.75 | 16.25 |
| Bessemer, Pittsburgh | **19.35** | 19.35 | 18.85 | 15.60 |
| Gray Forge, Pittsburgh | **18.35** | 18.35 | 17.35 | 14.50 |
| Lake Superior Charcoal, Chicago | **20.00** | 19.50 | 19.25 | 16.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | **28.00** | 28.00 | 27.50 | 25.00 |
| Forging Billets, Pittsburgh | **34.00** | 34.00 | 33.00 | 29.00 |
| Open Hearth Billets, Phila | **30.00** | 29.50 | 29.00 | 27.00 |
| Wire Rods, Pittsburgh | 34.00 | 34.00 | 34.00 | 31.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| O. Steel Rails, Chicago | **16.50** | 16.00 | 14.00 | 14.50 |
| O. Iron Rails, Philadelphia | **18.00** | 17.50 | 16.75 | 16.00 |
| O. Iron Rails, Chicago | **23.50** | 23.00 | 21.25 | 20.00 |
| O. Iron Rails, Philadelphia | **24.00** | 21.50 | 21.00 | 22.00 |
| O. Car Wheels, Chicago | **20.00** | 19.50 | 18.00 | 15.50 |
| O. Car Wheels, Philadelphia | **17.50** | 17.00 | 16.50 | 15.50 |
| Heavy Steel Scrap, Pittsburgh | **16.75** | 17.00 | 16.50 | 15.50 |
| Heavy Steel Scrap, Chicago | **16.50** | 16.00 | 13.00 | 14.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | 1.63½ | 1.73½ | 1.63½ | 1.63½ |
| Common Iron Bars, Chicago | **1.71½** | 1.71½ | 1.66½ | 1.65 |
| Common Iron Bars, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.65 |
| Steel Bars, Tidewater, New York | 1.64½ | 1.64½ | 1.64½ | 1.64½ |
| Steel Bars, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.50 |
| Tank Plates, Tidewater, New York | 1.74½ | 1.74½ | 1.74½ | 1.74½ |
| Tank Plates, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.60 |
| Beams, Tidewater, New York | 1.84½ | 1.84½ | 1.84½ | 1.89½ |
| Beams, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.70 |
| Angles, Tidewater, New York | 1.84½ | 1.84½ | 1.84½ | 1.89½ |
| Angles, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | 1.57½ | 1.57½ | 1.57½ | 1.50 |
| Skelp, Sheared Steel, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.55 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.20 |
| Wire Nails, Pittsburgh | **1.85** | 1.85 | 1.80 | 1.80 |
| Cut Nails, Pittsburgh | 1.75 | 1.75 | 1.75 | 1.80 |
| Barb Wire, Galv., Pittsburgh | 2.30 | 2.30 | 2.30 | 2.25 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | **18.87½** | 18.75 | 18.62½ | 16.25 |
| Spelter, St. Louis | 5.90 | 5.90 | 5.90 | 5.65 |
| Lead, New York | **5.85** | 5.85 | 5.75 | 4.85 |
| Lead, St. Louis | **5.75** | 5.75 | 5.65 | 4.77½ |
| Tin, New York | **40.60** | 40.25 | 39.00 | 32.70 |
| Antimony, Hallett, New York | **24.00** | 24.00 | 23.00 | 14.00 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 40.00 |
| Tin Plate, Domestic, Bessemer, 100 lb., New York | $3.94 | $3.94 | $3.94 | $3.74 |

## Chicago.

FISHER BUILDING, September 5.—(*By Telegraph.*)

The heavy buying of both raw and finished material which marked the midsummer months has largely subsided and the mills and furnaces are now endeavoring to work through the avalanche of accumulated specifications, increasing from day to day. To the other difficulties that harass operations and delay shipments to consumers a car shortage which promises to develop with the crop movements has been added, and the inter-company shipment of material between plants of the United States Steel Corporation is being greatly impeded. The Steel shortage is acute and the indications are that eastern Pennsylvania mills will be heavily drawn upon by Western consumers of Axle and Forging Billets during the next few months, as practically all of the Western mills have withdrawn from the market until the end of the year. The volume of new business in finished material is exceedingly light and will probably continue so well through the last quarter in view of the recent period of extreme activity. Advances of Wire products, Sheets and Steel Bars have not yet materialized and the indications are that none will be made officially, as all the large interests are opposed to any upward movement of values, the shortage of material notwithstanding. An active demand for early shipment characterizes the Pig Iron market and has resulted in still another advance during the week. Consumers are not as anxious to cover their future needs as they were at the beginning of the present upward movement. The largest transaction involves 6000 tons of Basic for first quarter delivery, purchased from Virginia furnaces by the American Steel Foundries for St. Louis delivery.

**Pig Iron.**—Deferred deliveries on existing contracts, especially from Southern States, have developed an active demand for spot Iron, and sales of car lots are being freely made on the basis of $16.50 to $17, Birmingham, for No. 2, equivalent to $20.40 and $20.90, Chicago. These prices are somewhat above the quotations of local furnaces, and this anomaly exists on account of the inability of Northern makers to meet immediate needs. The demand for fourth quarter delivery is not nearly so insistent as during the closing days of August, and few inquiries covering requirements through the first half of next year have been made by consumers during the past 10 days. While the foundry interests are awaiting development users of Steel making grades fear a shortage during the first quarter, and the American Steel Foundries has purchased 6000 tons from Virginia furnaces for this delivery. The blowing in of a new furnace at Joliet having an output of 500 tons daily will materially relieve the Illinois Steel Company, and the firing of two additional stacks this month which are being relined will practically satisfy Steel works needs. Malleable Bessemer has again advanced, following a sale of 11,500 tons at $20, and Southern furnaces are asking $15.50 to $16, Birmingham, for No. 2 for first quarter delivery, and $15 to $15.50 through the first half. We quote as follows, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $20.00 to $20.50 |
| Northern Coke Foundry, No. 1 | 20.25 to 20.50 |
| Northern Coke Foundry, No. 2 | 19.75 to 20.00 |
| Northern Coke Foundry, No. 3 | 19.25 to 19.50 |
| Northern Scotch, No. 1 | 20.00 to 20.50 |
| Ohio Strong Softeners, No. 1 | 19.80 to 20.05 |
| Ohio Strong Softeners, No. 2 | 19.30 to 19.55 |
| Southern Coke, No. 1 | 19.90 to 20.40 |
| Southern Coke, No. 2 | 19.40 to 19.90 |
| Southern Coke, No. 3 | 18.90 to 19.40 |
| Southern Coke, No. 4 | 18.40 to 18.90 |
| Southern Coke, No. 1 Soft | 19.90 to 20.40 |
| Southern Coke, No. 2 Soft | 19.40 to 19.90 |
| Southern Gray Forge | 16.90 to 17.40 |
| Southern Mottled | 16.65 to 17.15 |
| Malleable Bessemer | 20.00 to 20.50 |
| Standard Bessemer | 20.55 to 20.80 |
| Jackson Co. and Kentucky Silvery, 6 % | 22.30 to 22.80 |
| Jackson Co. and Kentucky Silvery, 8 % | 23.30 to 23.80 |
| Jackson Co. and Kentucky Silvery, 10 % | 24.30 to 24.80 |

**Billets and Rods.**—A heavy demand for Forging and Rolling Billets, for fourth quarter delivery, has developed during the past few days, and inasmuch as all of the Western producers have withdrawn from the market Eastern mills will probably be awarded the business. Forging Billets are now quoted at $36 to $38, according to the point of shipment, while Bessemer and Open Hearth Rods are held at $37 to $38, f.o.b. Chicago.

**Rails and Track Supplies.**—The market on Standard Rails continues comparatively quiet, contracts for several large lots being still under negotiation. The buying of Track material during the month of August was exceedingly heavy, one large interest alone having booked orders for 20,000 tons of Spikes for 1907 delivery. That the Chicago, Milwaukee & St. Paul Railroad will use 100,000 tons of Rails in 1907, contracts for which have already been closed, is indicated by the announcement of the company's intention to continue the construction of its line to the Coast. Quotations are as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.27½c. to 2.50c., according to delivery; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, $29 to $30; 25-lb., $31; 20-lb., $32; 16-lb., $33; 12-lb., $34, f.o.b. mill. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—While a number of new building projects are under negotiation, no contracts of importance have been placed with local fitters during the week. The mills in the absence of noteworthy bookings report a large number of small orders, which in the aggregate during August almost equaled their output and deliveries as a result are still greatly deferred. Heavy shipments of material cut to length are being made to points East and West, where building operations have been undertaken, for completion before the advent of the winter months. This material is uniformly quoted on the basis of 2.25c., f.o.b. Chicago. Quotations are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.86½c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.86½c.; larger than 6 in. on one or both legs, 1.96½c.; Beams, larger than 15 in., 1.96½c.; Zees, 3 in. and over, 1.86½c.; Tees, 3 in. and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending and other shop work.

**Plates.**—The new tonnage that is coming to the mills is comparatively small, although the specifications, especially from Steel car works and shipbuilders, are increasing in volume, and mill shipments as a result are being further deferred. The American Car & Foundry Company has booked orders for 1000 cars from the Western Pacific and the Denver & Rio Grande railroads and the Chicago, Milwaukee & St. Paul will shortly come into the market for 5000 cars. Quotations are as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 in., 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 in., 1.86½c., base, for ¼ in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c to 2.20c.; 72 in. wide, 2.35c. to 2.45c.; No. 8, up to 60 in. wide, 2.15c. to 2.25c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—Although some of the independent manufacturers are asking premiums on early deliveries of both Black and Galvanized Sheets the American Sheet & Tin Plate Company still continues to maintain prices on the prevailing basis and it is doubtful if an advance will be enforced in the near future, notwithstanding the pressure on the mills. Sheets from stock are moving freely and are being largely purchased by consumers having contracts with the mills, but who are not securing proper deliveries. Quotations are as follows: Blue Annealed, No. 10, 1.91½c.; No. 12, 1.96½c.; No. 14, 2.01½c.; No, 16, 2.11½c.; Box Annealed, Nos. 17 to 21, 2.41½c.; Nos. 22 to 24, 2.46½c.; Nos. 25 and 26, 2.51½c.; No. 27, 2.56½c.; No. 28, 2.66½c.; No. 29, 2.81½c.; No. 30, 2.91½c. Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 15 and 16, 2.81½c.; Nos. 17 to 21, 2.96½c.; Nos. 22 to 24, 3.11½c.; Nos. 25 and 26, 3.31½c.; No. 27, 3.51½c.; No. 28, 3.71½c.; No. 30, 4.21½c. Sheets from store: Blue Annealed, No. 12, 2.15c. to 2.25c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.60c. to 2.70c.; Nos. 22 to 24, 2.65c. to 2.75c.; No. 26, 2.70c. to 2.80c.; No. 28, 2.85c. to 2.95c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3.10c. to 3.20c.; Nos. 22 to 24, 3.35c. to 3.45c.; No. 26, 3.45c. to 3.55c.; No. 27, 3.55c. to 3.75c.; No. 28, 3.85c. to 3.95c.; No. 30, 4.45c. to 4.55c.

**Bars.**—Rumors of an early advance on Steel Bars have now been largely dissipated, and the indications are that prices will be maintained on an unchanged basis through the remainder of the year, despite the crowded mill conditions. The Iron mills report a large volume of business, especially for early delivery. Steel Bar consumers to a considerable extent are deferring their requirements in order to secure satisfactory deliveries. We quote as follows: Iron Bars, 1.71½c. to 1.76½c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

**Merchant Pipe.**—Contracts for approximately 3000 tons of Pipe for the Indiana Steel Company, Gary, Ind., will be awarded within a few days. This Pipe is to be used for the water mains and the various steam lines for its plant. Jobbers throughout the West and Northwest are buying freely and in some cases are placing contracts for their future needs. Sales are made on the basis of 81 and 5 off the list, Pittsburgh, and discounts in car lots, Chicago, are as follows: Black Steel Pipe, 79.35 per cent. on the base sizes, ¾ to 6 in., and Galvanized, 69.35 per cent. Iron Pipe is quoted from 1½ to 2 points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 in.

**Boiler Tubes.**—Market conditions remain practically unchanged. The mills are booking little new business, but report specifications exceptionally satisfactory on contracts that were placed several months ago. Mill quotations are well maintained, as follows, on base sizes, 2¾ to 5 in., in car lots; Steel Tubes, 68.35; Iron, 55.35; Seamless, 50.35; 2½ in. and smaller and lengths over 18 ft., and 2½-in. and lengths over 22 ft., 10 per cent. extra. Store prices are unchanged, as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in. | 40 | 35 | 42½ |
| 1¾ to 2¼ in. | 50 | 35 | 35 |
| 2½ in. | 52½ | 35 | 30 |
| 2¾ to 5 in. | 60 | 47½ | 42½ |
| 6 in. and larger | 50 | 35 | .. |

**Cast Iron Pipe.**—The cities of St. Louis and Milwaukee will shortly award contracts for their pipe requirements for fall laying, aggregating 2500 and 375 tons respectively. The current demand is exceedingly heavy, considering the season, and the volume of business is large, notwithstanding the absence of large inquiries for municipal work. Quotations are as follows: Water Pipe, 4-in., $33; 6, 8, 10 and 12-in., $32; over 12-in., $31, with $1 extra for Gas Pipe.

**Merchant Steel.**—Specifications still exceed mill capacity and from present indications most of the implement makers will exceed their tonnage requirements contracted for earlier in the year. Material improvement has been noted in the market for Shafting, and prices are better maintained than at any time in the past six months. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.86½c.; Iron Finish, up to 1½ x ½ in., 1.81½c.; Iron Finish, 1½ x ½ in. and larger, 1.86½c., base; Channels for solid rubber Tires, ¾ to 1 in., 2.16½c., and 1⅛-in. and larger, 2.06½c; Smooth Finished Machinery Steel,

1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.96½c.; Cutter Shoe, 2.35c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots and 45 per cent. in less than car lots, in base territory.

**Coke.**—Slight advances in both Connellsville and By-Product Cake have been reported during the past few days, and owing to the car shortage, not only in the Connellsville region, but in this district as well, shipments to consumers are not going forward as rapidly as desired. We quote: By-Product Foundry Coke, $5.75 to $5.90; 72-hour Connellsville, $5.65 to $5.90, and Virginia, $5.25, f.o.b. cars, Chicago.

**Old Material.**—The Inland Steel Company has not yet closed for its requirements of Heavy Melting Steel and is offering somewhat higher prices than a week ago. In the meantime, however, dealers have made further advances and no deals on this tonnage have yet been closed. The Baltimore & Ohio Railroad this week will dispose of approximately 3000 tons of assorted grades, only a small portion of which, however, will be available in this market. While further advances of practically 50c. a ton have been made on all grades the pressure for material is not quite as great as existed several weeks ago. It is evident that most of the dealers have covered their short sales and most of the Iron mills have purchased for their immediate needs. One large interest is feeling the market, and it is probable will place heavy contracts very shortly for Wrought Scrap. Quotations on gross tons, car lots, f.o.b. Chicago, are as follows:

| | |
|---|---|
| Old Iron Rails | $23.50 to $24.00 |
| Old Steel Rails, 4 ft. and over | 17.50 to 18.00 |
| Old Steel Rails, less than 4 ft | 16.50 to 17.00 |
| Heavy Relaying Rails, subject to inspection, 50 lb. and under | 28.50 to 29.00 |
| Old Car Wheels | 20.00 to 20.50 |
| Heavy Melting Steel Scrap | 16.50 to 17.00 |
| Frogs, Switches and Guards | 16.50 to 17.00 |
| Mixed Steel | 14.00 to 14.50 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $19.00 to $19.50 |
| Iron Car Axles | 24.50 to 25.00 |
| Steel Car Axles | 20.50 to 21.00 |
| No. 1 Railroad Wrought | 16.00 to 16.50 |
| No. 2 Railroad Wrought | 15.50 to 16.00 |
| Railway Springs | 15.00 to 16.00 |
| Locomotive Tires, smooth | 15.50 to 16.00 |
| No. 1 Dealers' Forge | 13.50 to 14.00 |
| Mixed Busheling | 11.50 to 12.00 |
| Iron Axle Turnings | 10.50 to 11.00 |
| Soft Steel Axle Turnings | 10.50 to 11.00 |
| Machine Shop Turnings | 10.00 to 10.50 |
| Cast Borings | 9.00 to 9.50 |
| Mixed Borings, &c | 9.00 to 9.50 |
| No. 1 Mill | 10.00 to 10.50 |
| No. 2 Mill | 9.00 to 9.50 |
| No. 1 Boilers, cut to Sheets and Rings | 10.50 to 11.00 |
| No. 1 Cast Scrap | 15.50 to 16.00 |
| Stove Plate and Light Cast Scrap | 13 00 to 13.50 |
| Railroad Malleable | 15.00 to 15.50 |
| Agricultural Malleable | 14.50 to 15.00 |

**Metals.**—A ¼c. advance has been made on both Casting and Lake Copper, considerable buying having developed. Lead is up 10c. per 100 lb. Tin and Spelter remain practically unchanged. We quote: Casting Copper, 18¾c. to 18⅞c.; Lake, 18⅞c. to 19¼c., in car lots; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 42½c.; small lots, 43¼c. to 43¾c.; Spelter, prompt delivery, 6.20c. to 6.30c., for car lots; Lead, Desilverized, 5.90c. to 6c., for 50-ton lots; Corroding, 6.57½c. to 6.67½c., for 50-ton lots; on car lots, 2¼c. per 100 lb. higher; Cookson's Antimony, 28c., and other grades, 26c. to 27c.; Sheet Zinc is $7.75 list, f.o.b. Laselle, in car lots of 60-lb. casks. On Old Metals we quote: Copper Wire, 16½c.; Heavy Copper, 16¼c.; Copper Bottoms, 15½c.; Copper Clips, 16c.; Red Brass, 15½c.; Red Brass Borings, 13¼c.; Yellow Brass, 12¼c.; Yellow Brass Borings, 10½c.; Light Brass, 8¾c.; Lead Pipe, 5.40c.; Tea Lead, 5c.; Zinc, 5c.; Pewter, No. 1, 26c.; Tin Foil, 32c.; Block Tin Pipe, 27½c.

## Philadelphia.

REAL ESTATE TRUST BUILDING, September 4, 1906.

Business the past week has been somewhat interfered with by the holiday, but the general situation is unchanged. Prices for Pig Iron are higher and the supply is no larger than it was a week ago, if as large. This applies more especially to Foundry grades, which in many cases are not obtainable in quantities sufficient for consumers to keep up their regular mixtures. Prices are therefore very irregular, varying as much as $1 to $2 per ton, according to circumstances. The great difficulty is that everything is sold close up, and those who are unfortunate enough to need spot Iron have to pay almost whatever price is asked to secure the accommodation. How long before these conditions can be changed is a serious problem, but a gradual easing up is expected, although it may not be felt to any great extent for several weeks. It is hoped, however, that the turning point has been reached, and that every week will show some amelioration from the stringent conditions which now prevail. Consumption keeps up to the highest point yet reached, to meet which there must be increased supplies of Pig Iron. A few thousand tons more per week would be some relief, but, as noted in a recent report, the *Bulletin* of the American Iron & Steel Association has shown that by December the active capacity will be 25,000 tons per week greater than it is at the present time. The higher prices which are now obtainable should hasten the work of construction and repairs, and ordinarily $20 for Pig Iron could be depended upon to bring everything available into active operation. There are, however, some unusual difficulties to overcome, such as a shortage of labor all along the line, from the mines to the furnace and from the furnace to the finishing mills, and so on down to the end of the line. Nevertheless, better supplies of Pig Iron are confidently expected, so that it is believed that the worst of the shortage has already been experienced, although it may take time to assure consumers of the fact.

**Pig Iron.**—It is impossible to quote prices with any degree of confidence, as they are liable to change with every transaction. Sales for immediate shipments have been made at from $21 to $22, delivered, for No. 2 X Foundry. This applies not only to Philadelphia and immediate vicinity, but to Susquehanna and Lebanon Valley points, so that the scarcity seems to be widespread, although it is presumed that the majority are provided for, and that the sales mentioned are mostly of an emergency character. At the same time furnace owners are not willing to quote under $20 for 1907 deliveries, while some ask that figure, f.o.b. cars furnace. For the last quarter a moderate tonnage might be taken at $20.50 to $21, but even at those figures business is not sought for. The situation is so uncertain that it is impossible to say what the next movement will be. If buyers must have Iron (or think they ought to have it) sellers will naturally quote higher prices, and as a matter of fact prices recently quoted were made high enough (as it was supposed) to prevent a sale, but anything at not over $22 was promptly taken. If these conditions continue another week it will bring us within sight of $25 Iron, than which probably nothing could be more unfortunate for the general market. Buyers are either under the stress of great necessity or they are unduly alarmed. Larger supplies are absolutely assured in the near future, yet makers of Pig Iron and their agents are fairly besieged with requests for Iron. No doubt, the same inquiries are sent out to half a dozen or more sellers, so that the real need is magnified in proportion. The scare is on, however, and for the time being nothing is likely to overcome it until there is definite knowledge that more furnaces are in blast, which knowledge may be forthcoming sooner than expected. As we have already stated, prices are practically unquotable, but at the moment the range from the lowest to the highest would be about as follows as delivered prices:

| | |
|---|---|
| No. 1 X Foundry | $21.50 to $22.50 |
| No. 2 X Foundry | 20.25 to 22.00 |
| No. 2 Plain | 19.50 to 20.50 |
| Standard Gray Forge | 17.75 to 18.25 |
| Ordinary Gray Forge | 17.00 to 17.50 |
| Basic | 18.50 |
| Low Phosphorus | 24.50 to 25.00 |
| Malleable | 20.50 to 21.00 |

**Steel.**—The demand is very heavy, and mills are so well sold up that they are afraid to quote on large lots. For such deliveries as they can make, however, prices would be about $30 for ordinary Rolling Billets and $35 to $36 for Forging Steel.

**Steel Alloys.**—Although there is not much doing, prices are firmer, following an advance in Europe of 15 to 20s. per ton. Ferromanganese would be about $90 to $92, for September shipments; $87 to $89 for last quarter, and $82 to $85 for 1907; Ferrosilicon, spot or September, $95 to $97 and 20 per cent. Spiegel, $35.50 to $36.50.

**Plates.**—Not quite as much business is doing as during the several preceding weeks, but specifications come in well, showing that consumption is as large as it has ever been. Prices are firm, and while there is no quotable advance some mills ask a tenth more for prompt shipments. The advance in raw materials leaves very little margin for manufacturers and an all-around advance in Plates would not cause much surprise. Meanwhile prices remain as follows:

| | Carload. Cents. | Part carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.73½ | 1.78½ |
| Flange or Boiler Steel | 1.83½ | 1.88½ |
| Marine | 2.13½ | 2.18½ |
| Locomotive Firebox Steel | 2.23½ | 2.28½ |

The above are base prices for ¼-in. and heavier. The following extras apply.

| | Extra per 100 pounds. |
|---|---|
| 3-16-in. thick | $0 10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—The demand is good, although no large orders have been placed hereabouts during the past few days; but mills are well supplied with business, which with

the usual day to day orders, keeps everything employed to fullest capacity. Prices are unchanged, as follows: Beams, Angles and Channels, 1.83½c. to 2c., delivered.

**Bars.**—Prices are hardening along the entire line, and it would cause no surprise to see another advance before long. The selling price is 1.63½c. to 1.68½c. for either Iron or Steel Bars, but the deliveries on the latter are slow, and on Refined Iron they are not very prompt. The unsettled condition of labor affects most of the mills in this territory, and if matters are not arranged soon there may be more or less shortage in Bar Iron. At present there are no indications of an early settlement, so that prices are kept very strong.

**Sheets.**—Business is steadily improving and mills are now running to their full capacity. All the various numbers are wanted and for ordinary lots command full prices as follows, or a tenth less for mill shipments: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; Nos. 27, 2.70c., and No. 28, 2.80c.

**Old Material.**—The market is very strong and in most articles prices are again higher. Middlemen are in many cases paying more money than consumers will pay, so that there is very little doing as far as the mills are concerned. Bids and offers for deliveries in buyers' yards are about as follows:

| | |
|---|---|
| Steel Crops | $18.00 to $18.50 |
| No. 1 Steel Scrap | 17.75 to 18.25 |
| Low Phosphorus Scrap | 22.00 to 22.50 |
| Old Steel Axles | 21.00 to 22.00 |
| Old Iron Axles | 29.00 to 30.00 |
| Old Iron Rails | 24.00 to 25.00 |
| Old Car Wheels | 17.50 to 18.00 |
| Choice Scrap, R. R. No. 1 Wrought | 21.00 to 21.50 |
| Choice No. 1 Yard Scrap | 19.00 to 19.50 |
| Long and Short | 17.00 to 17.50 |
| Machinery Scrap | 17.00 to 17.50 |
| Wrought Iron Pipe | 15.50 to 16.00 |
| No. 1 Forge Fire Scrap | 13.50 to 14.00 |
| No. 2 Light Ordinary | 10.50 to 11.00 |
| Wrought Turnings | 13.50 to 14.00 |
| Axle Turnings, Choice Heavy | 14.00 to 14.50 |
| Stove Plate | 13.25 to 13.75 |
| Cast Borings | 11.00 to 11.50 |

## Cleveland.

CLEVELAND, OHIO, September 4, 1906.

**Iron Ore.**—The assurance that the Ore movement will be less than expected during the current season of navigation causes some anxiety in the furnace trade. The amount left on the docks last spring was smaller than had been expected. Furnaces this summer have been in operation more steadily than heretofore. The consumption by individual furnaces has been larger, due to improvement in methods. The number of furnaces using Lake Superior Ore in this territory has been increased. In addition the product is being shipped into a wider territory than customary. Buying of the foundry interests for next year's delivery indicates that, barring accidents at the furnaces, the rate of production will be continued, as it has been all through the winter. These things being taken into consideration, it is feared there will be a shortage of Ore during the winter. The docks along Lake Erie have big piles, however, which have not been disturbed for years. This supply will assist to some extent in relieving any shortage which may appear later in the year. While no definite statement has been obtained from the furnaces generally, it is apparent that a few of them have no stocks on hand there to speak of, having consumed close to the shipments from the lakes. The possible shortage of Ore is the impetus back of the buying demand now being seen for 1907 delivery. The Ore shippers, actuated by a spirit of conservatism, have refused to sell so far, but contracting is expected earlier this year than usual. There are not very sanguine hopes that the movement for August will exceed 5,650,000 tons. The difficulties of production will increase from now on, due to the approach of cold weather. In addition lake boats will not be as plentiful hereafter, since the lake vessels will be in demand in the grain and other trades. The wild rates have not yet advanced, holding at 75c. from the head of the lakes as a basis, but an advance is practically assured before another two weeks have pased.

**Pig Iron.**—The shortage of Foundry Iron for spot shipment has not been relieved, but, on the contrary, seems to have been exaggerated during the past week. The need of the shippers has not grown seemingly, but the few who were delayed have been added to by others who are just now coming into the market. The result has been to put the price a little higher on the small lots changing hands. The furnace interests can easily obtain $21 in the valleys for their spot Iron. The foundry interests are still anxious to cover their needs for the first half of next year's delivery. First quarter material appears to be pretty well cleaned up. First half Iron is not so abundant as it was, and some furnaces are quoting prohibitive prices. But even $19 to $19.25 in the valleys for first quarter and even for first half delivery have not kept the buyers out of the market. Bessemer and Basic are scarce, and furnacemen have little difficulty in making sales at $18.50 to $18.75 in the valleys for first half delivery. There is little or no spot Iron.

**Coke.**—The market is still strong, with spot Coke scarce, and with the ovens unwilling to make contracts for first half delivery on the basis of present prices. Many are not even willing to quote for first half delivery. The best grades of 72-hr. Foundry Coke are selling freely at $3.50 at the oven, and Furnace Coke is selling at $2.90 to $3 at the oven.

**Finished Iron and Steel.**—The heavy demand for Structural Shapes and Plates from the railroads and shipbuilding interests has shortened the supply in this territory to a point where it is difficult for the general trade to get what is needed. Some of them have resorted to Eastern mills, paying a premium for prompt delivery. This ranges from $2 to $4 a ton over the association price of 1.70c. at the mill for Shapes and 1.60c. for Plates. The demand from the shipbuilding interests is not yet over. One package freight line on the lakes has in contemplation the purchase of six ships, two of which will be built at once. Another line of the same sort has an inquiry in for one large ship, and will have to buy another to replace a ship which was lost. One of the passenger boat lines on the lakes is contemplating the purchase of one and possibly two ships. The buying of freighters is declared not to be completed. The Bar Iron situation is exceptionally strong. Mills have not yet caught up with their orders, on which they fell behind during the hot spell. In addition there has been good steady buying. The result is that the market is now strong on the basis of 1.60c., Pittsburgh. Bar Steel is also in demand and strong at 1.50c., Pittsburgh. Sheet orders are coming in freely, and the buying out of stock is heavy. Prices are unchanged out of stock at 2.15c. for No. 10 Blue Annealed, 2.80c. for No. 28 One Pass Cold Rolled and 3.80c. for No. 28 Galvanized.

**Old Material.**—The dealers' boom has carried prices up comprehensively. While consumers are taking a little material they are not paying the present prices without complaint. The following are dealers' prices to the trade f.o.b. Cleveland, per gross ton: Old Steel Rails, $17 to $18; Old Iron Rails, $25 to $26; Iron Car Axles, $20 to $21; Heavy Melting Steel, $17 to $18. Net tons: Cast Borings, $9 to $10; No. 1 Busheling, $15; No. 1 Railroad Wrought, $16.50 to $17; No. 1 Cast, $15 to $15.50. Iron and Steel Turnings and Drillings, $11 to $12.

## Cincinnati.

FIFTH AND MAIN STS., Sept. 5, 1906.—(*By Telegraph.*)

**Pig Iron.**—The excitement incident to the past two or three weeks has subsided to some extent, and while the inquiry continues active and sales in the aggregate are satisfactory there is a very apparent absence of that strenuousness which marked the closing days of the past month. During that period spot Iron when obtainable commanded a premium, the amount of which depended largely upon the individual cases involved. This scarcely represented the true state of the market at the time, and merely showed the tendency toward which it was drifting. Some of the large Southern producers are stated to have been quoting on a $15, Sheffield, basis, equivalent to $14.75, Birmingham, on account of the freight differential, but while a few sales were made at this figure we are advised that it has now been withdrawn. From all the information obtainable the market for Southern Iron for the first quarter of next year appears to be fairly well established on a $15, Birmingham, basis, at which a large tonnage was sold. Present conditions, however, are rather difficult to analyze, opinion varying as to the latitude allowable between the maximum and minimum prices quotable. Taking as a basis next year's quotations as the minimum, and the prices at which spot Iron is obtainable for the maximum, the range would be $15 to $16, Birmingham. Standard Southern Car Wheel Iron is said to be very scarce and strong at ruling quotations. In the North all reports indicate that the furnaces are practically sold up for the remainder of the year and that spot Iron is almost unobtainable. Prices running into the first quarter of the year are said to be strong at $18, at furnace. The inquiry for Malleable continues active with prices firm. Freight rates from the Hanging Rock District to Cincinnati are $1.15, and from Birmingham $3. We quote, f.o.b. Cincinnati as folows:

| | |
|---|---|
| Southern Coke, No. 1 | $18.50 to $19.50 |
| Southern Coke, No. 2 | 18.00 to 19.00 |
| Southern Coke, No. 3 | 17.50 to 18.50 |
| Southern Coke, No. 4 | 17.00 to 17.50 |
| Southern Coke, No. 1 Soft | 18.50 to 19.50 |
| Southern Coke, No. 2 Soft | 18.00 to 19.00 |
| Southern Coke, Gray Forge | 16.25 to 16.75 |
| Southern Coke, Mottled | 15.75 to 16.25 |
| Ohio Silvery, No. 1 (8 per cent. Silicon) | 23.15 |
| Lake Superior Coke, No. 1 | 19.15 to 19.65 |
| Lake Superior Coke, No. 2 | 18.65 to 19.15 |
| Lake Superior Coke, No. 3 | 18.15 to 18.65 |
| *Car Wheel Irons.* | |
| Standard Southern Car Wheel | $25.50 to $26.00 |
| Lake Superior Car Wheel | 24.50 to 25.00 |

**Coke.**—Large contracts have been made embracing next year's business and the market is very strong. We quote the best brands of Connellsville and Virginia Foundry $3.25 to $3.50, f.o.b. ovens.

**Finished Iron and Steel.**—The situation is practically unchanged both as to prices and new developments. The mills are running full, with Plates and Shapes quite active. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-in. and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire, 1 x ¼ in. or heavier, 1.83c., in carload lots.

**Old Material.**—The tone of the market is quite spirited, with considerable strength. We quote dealers' prices, f.o.b. Cincinnati, about as follows: No. 1 Railroad Wrought Scrap, $14.50 to $15 per net ton; Cast Borings, $5 to $6 per net ton; Steel Turnings, $7 to $8 per net ton; No. 1 Cast Scrap, $13 to $14 per net ton; Iron Rails, $19 to $20 per gross ton; Steel Rails, rolling mill lengths, $15 to $15.50 per gross ton; Relaying Rails, 56-lb. and upward, $28 to $29 per gross ton; Iron Axles, $21 to $22 per net ton; Car Wheels, $17 to $18 per gross ton; Low Phosphorus Scrap, $17 to $18 per gross ton.

## Pittsburgh.

PARK BUILDING, September 5, 1906.—(*By Telegraph.*)

**Pig Iron.**—August broke all records for Pig Iron sales, the Bessemer Pig Iron Association and W. P. Snyder & Co. reporting sales of Bessemer and Basic Iron for the month amounting to 310,500 tons. Prices ranged from $17.75, Valley furnace, the lowest, up to $18.50, the highest. These enormous sales account largely for the sold up condition of the furnaces in the two valleys, which only have a nominal tonnage in Bessemer and Basic to sell for delivery prior to July of next year. There is still a moderate inquiry for Bessemer and Basic, but most large consumers are pretty well covered. Bessemer Iron for prompt delivery is held firmly at $18.50 to $18.75 and Basic at $18.25 to $18.50 at Valley furnace. Sales of Foundry Iron in the past week have been light, but there is not much Iron offering. Northern No. 2 for delivery in first quarter is held at about $18.50, Valley furnace, while $19 or higher is reported to have been paid for No. 2 for prompt delivery. Forge Iron is firm on the basis of about $17.50, Valley furnace, or $18.35, Pittsburgh, but we do not hear of any recent sales.

**Steel.**—Prices on Steel are practically whatever sellers care to ask that have any to offer. Bessemer Billets are held at $28 to $28.50, and Open Hearth Billets are quoted at $29 to $30. Sheet and Tin Bars in long lengths are firm at $29 to $30, the latter price for September delivery. Forging Billets are held at $34 to $35, and even higher prices have been asked.

(*By Mail.*)

August was a month of unprecedented activity in all branches of the Iron and Steel trades, the amount of tonnage sold in Pig Iron, Steel and Finished Material having been simply enormous. All previous records for a summer month were broken. It is but natural that business should quiet down a little, and this was the case the past week. The large consumers of Pig Iron are pretty well covered into the first quarter of next year and the furnaces have their product sold up, so that the market now is one where producers of Pig Iron are filling their contracts and consumers are taking the Iron as fast as the furnaces can ship it. The consumption of Pig Iron for some time has been enormous and while this lasts there is not much danger of any softening in prices. Bessemer Pig Iron continues firm, on the basis of $18.50 to $18.75, Valley furnace, for balance of this year delivery, while Basic is also firm, at $18 to $18.25, Valley furnace. For delivery through first quarter and first half of next year Bessemer Pig is held at $17.75 to $18, Valley furnace, and Basic at about the same price. Steel continues as scarce as ever, but there are signs that the shortage in Sheet and Tin Bars will soon be relieved, as the two Youngstown mills are now turning out a heavy tonnage. Coke is in active demand. Finished Iron and Steel could hardly be more active. The efforts of the large interests are now centered in trying to hold the market where it is and prevent it from running away.

**Ferromanganese.**—The demand continues active and prices are firm. We quote 80 per cent. Foreign Ferro at $90 to $93, for September delivery, while about $85 is quoted for balance of the year shipment.

**Wire Rods.**—The demand is strong, while the two leading makers, the American Steel & Wire Company and Pittsburgh Steel Company, have been out of the market as free sellers for some months. We quote Bessemer Rods at $34 to $34.50, while Open Hearth Rods are practically unobtainable at any price. Chain Rods are held at about $35, Pittsburgh.

**Skelp.**—Prices are firm, with a good demand. We quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.65c. to 1.70c.; Sheared Iron Skelp, 1.75c. to 1.80c., Pittsburgh, these prices being for ordinary widths and gauges.

**Steel Rails.**—The Carnegie Steel Company is absolutely out of the market as a seller of Standard Sections for delivery this year, but has booked about 10,000 tons the past week for 1907 delivery. The demand for Light Rails continues active, with 16 to 20 lb. Sections quoted at $31 and 25 to 45 lb. sections at $30. Standard Sections are $28 at mill.

**Structural Material.**—Deliveries from the mills are not as satisfactory as they were some time ago, and on medium sizes they are from two to three months behind. No large contracts have been placed in this district in the past week, but there is a steady flow of small orders. Premiums are now being paid for prompt delivery on certain sizes. We quote: Beams and Channels, up to 15-in., 1.70c.; over 15-in., 1.80c.; Angles, 3 x 2 x ¼ in. thick up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3-in. and larger, 1.70c.; Tees, 3-in. and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-in. are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Plates.**—Large consumers pretty well covered their requirements some time ago, and new tonnage coming in is rather light. Specifications on contracts are heavy, and on both Universal and Sheared Plates the mills are two months or longer behind. Prices are firm, concessions offered by certain mills in July and August having been withdrawn. We quote: Tank Plates, ¼ in. thick, 6¼ in. up to 100 in. in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

| | Extra per 100 lb. |
|---|---|
| Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edge | $0.10 |
| Gauges Nos. 7 and 8 | .15 |
| Gauge No. 9 | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

**Sheets.**—As yet no announcement has been made of an advance in prices of Sheets by the leading interest, but this is expected by the trade at any time. The American Sheet & Tin Plate Company and practically all of the other Sheet mills are sold up for the balance of this year, and premiums are being paid more frequently for prompt deliveries. Some Sheet mills are now paying $30 for Long Sheet Bars, and it is claimed that the present prices of Sheets, based on the above prices for Bars, allow practically no profit. Specifications on contracts and shipments of Sheets by the mills in August was enormously heavy and broke all previous records for that month. We quote: Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.65c., and No. 30, 2.75c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.80c., and No. 30, 4.05c. We quote No. 28 Gauge Painted Roofing Sheets at $1.75 per square, and Galvanized Roofing Sheets, No. 28 gauge, at $3.10 per square for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

**Bars.**—The mills rolling Steel Bars are congested with tonnage, the Carnegie Steel Company now taking orders for

delivery in four months, while the other Steel Bar mills cannot do much better. Reports are current of an early advance of at least $2 a ton in Steel Bars, but this will not take place if the large interests can prevent it, as they are strongly opposed to any advance at this time, believing that such action would be unwise. We quote Steel Bars at 1.50c., base, half extras, but note that as high as 1.65c. to 1.70c. has been paid where the seller would agree to make deliveries within two weeks from date of order. Mills rolling Iron Bars report that a heavy tonnage is being placed and prices are very firm. Iron Bars are now held at 1.60c., minimum, with some sellers quoting as high as 1.70c. to 1.75c., for reasonably prompt delivery.

**Hoops and Bands.**—The mills are running mostly on specifications on old contracts, which are coming in very freely, but the amount of new tonnage being placed is small. We quote Steel Hoops at 1.90c. and Bands for all purposes at 1.50c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of $2 a ton being charged for less than carloads.

**Tin Plate.**—The expected advance in prices of Tin Plate has not yet been announced by the leading interest, but is looked for by the trade to come any day. We understand that some of the large consumers have placed heavy contracts for delivery in the last quarter of the first three months of next year, but some mills are refusing to sell so far ahead at present prices. The supply of Tin Bars does not show any betterment and this is keeping down the output ofo Tin Plate very materially. We quote Tin Plate at $3.75 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carload and larger lots.

**Railroad Spikes.**—The demand for Spikes is probably heavier than ever before in the history of the trade, and none of the mills can take orders for delivery inside of three to four months. We quote Railroad Spikes at $2.35 to $2.40 per 100 lb. for indefinite delivery. Premiums over these prices have been paid for prompt shipment.

**Merchant Steel.**—Large implement makers continue to specify freely on contracts placed some time ago, and shipments by the mills on these specifications and on new orders are heavy. The mills are getting further behind in deliveries, and on Steel Bars and some other sections are not promising deliveries inside of four months. Prices are very firm and we quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish, up to 1½ x ½ in., 1.65c., and Iron Finish, 1½ x ½ in. and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 in., 2c., and 1⅛-in. and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.75c. to 1.80c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

**Spelter.**—We note a good demand, but prices are still demoralized. We quote prime grades of Western Spelter at 5.85c., St. Louis, or 5.97½c., Pittsburgh, but on a firm offer it is probable this price would be shaded.

**Pipe.**—With the opening of the fall trade the demand for Merchant sizes of Pipe is getting heavier. The tonnage entered by the mills in August was much larger than in the same month last year. No large contracts for Line Pipe have been recently placed, but the mills are filled in this class of product for practically the balance of the year. As yet there are no indications of any advance in prices of Pipe, this being undoubtedly the cheapest article on the whole Iron and Steel list. The extreme discount on Merchant sizes of Steel Pipe remains at 81 and 5 per cent. off, to the large trade. Official discounts for carloads, which continue to be shaded one point or more, are as follows:

*Merchant Pipe.*

| | Jobbers, carloads. | | | |
|---|---|---|---|---|
| | Steel. | | Iron. | |
| | Black. | Galv. | Black. | Galv. |
| | % | % | % | % |
| ⅛ and ¼ in. | 72 | 56 | 69 | 53 |
| ⅜ in. | 74 | 60 | 71 | 57 |
| ½ in. | 76 | 64 | 73 | 61 |
| ¾ to 6 in. | 80 | 70 | 77½ | 67½ |
| 7 to 12 in. | 75 | 60 | 72½ | 57 |
| Extra strong, plain ends: | | | | |
| ⅛ to ⅜ in. | 65 | 53 | 62 | 50 |
| ½ to 4 in. | 72 | 60 | 69 | 57 |
| 4½ to 8 in. | 68 | 56 | 65 | 53 |
| Double extra strong, plain ends: | | | | |
| ½ to 8 in. | 61 | 50 | 58 | 47 |

**Boiler Tubes.**—New tonnage in Tubes is light, but buyers are specifying freely on contracts placed some time ago. There is still some unevenness in prices, but concessions offered by the mills some time ago have been withdrawn. Discounts on carload lots, which are still being shaded to some extent, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1¼ in. | 45 | 50 |
| 1⅜ to 2¼ in. | 45 | 62 |
| 2½ in. | 50 | 64 |
| 2¾ to 5 in. | 57 | 70 |
| 6 to 13 in. | 45 | 62 |

**Iron and Steel Scrap.**—The Scrap market is a waiting one, consumers not being willing to pay the prices asked by dealers, while the latter are not inclined to make concessions on Scrap they have in stock, believing the market, in sympathy with Pig Iron and Steel, will be higher. As a result of this condition prices are firm, but not a great deal of Scrap is changing hands. Heavy Steel Melting Scrap is held at $16.75 to $17 per gross ton, most dealers refusing to shade the latter price. Dealers quote other grades of Scrap as follows, per gross ton, f.o.b. Pittsburgh: No. 1 Wrought Scrap, $18.25 to $18.50; Bundled Sheet Scrap, $14.50 to $14.75; Cast Iron Borings, $9.75 to $10; Wrought Turnings, $12.25 to $12.50; Machinery Cast Scrap, $16; Iron Axles, $28 to $28.50; Steel Axles, $23.50 to $24.

**Coke.**—The output of Coke is much restricted, owing to the indifference of the Coke workers as to whether they work full time or not. Labor in the Coke regions is now being paid high wages, and after the men have worked three or four days they are careless about the balance of the week, and often refuse to work for two and three days at a time. This is cutting down the output of Coke very materially and accounts for its continued scarcity. Strictly Connellsville Furnace Coke continues to bring about $2.85 and 72-hour Foundry $3.25 to $3.50 at oven for prompt delivery. As yet there have not been many contracts for Furnace Coke made for delivery next year, but operators are quoting as high as $2.75 for first half. As noted in this report last week, some contracts for Furnace Coke for this year have been made on an exchange basis of 7 tons of Coke for 1 ton of Bessemer Iron. Furnace Coke made outside of the Connellsville region is quoted at $2.50 to $2.65, and Foundry at about $3 a ton.

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E. L. Caton, formerly with the Ohio Iron & Metal Company, is now connected with Wilkoff Brothers, Park Building, Pittsburgh, dealers in Iron and Steel Scrap, who also maintain offices in Youngstown and Cleveland.

## Birmingham.

BIRMINGHAM, ALA., September 2, 1906.

**Pig Iron.**—The business now being booked is almost entirely for delivery during the first quarter of 1907, with a few sales extending over the first half. These latter, however, are the exception rather than the rule. Prices for next year's delivery are from $15 to $15.50 on a No. 2 Foundry basis, and while a large number of contracts have been made they are usually for small tonnage. There has been considerable falling off in the excitement which has prevailed for the past few weeks and both producers and melters are now taking a more conservative view of the situation, though a few buyers who have been unable to obtain deliveries of desired grades on old contracts have been forced to pay as high as $17 for No. 2 Soft for immediate shipment. These sales are exceptional, however, and should not be construed as fixing the market at anything like that figure. A close canvass of the situation discloses the fact that, with possibly one exception, all the furnaces in the district will have Iron to sell for delivery during November and December. As the weather grows cooler not only a better production may be expected but an improvement in the grades as well, and while on account of the workings of the furnaces at this time there is a scarcity of the higher grades this will not continue a great while longer. Some delay is being experienced in securing desired deliveries, especially where the contract happens to be at a low price, but so far the car situation is very good and Iron is being shipped as rapidly as manufactured. The small stocks which have accumulated on a few of the yards are said to be off grades.

The Lacey-Buck Iron Company, which was to have blown in its Trussville furnace on September 1, states that owing to unavoidable delay it will not be ready for the torch before September 15.

**Cast Iron Pipe.**—No large contracts are being figured on at the present time, but several lettings will take place within the next few days for small tonnage. St. Louis opens bids on September 4 for 3000 tons of various sizes. On the 6th New Orleans will contract for 2000 to 3000 tons, largely specials, to be used in connection with the new filtration plant. Milwaukee is in the market for 2000 tons, to be let on September 11.

The Soil Pipe foundries in the district are making strenuous efforts to run to their full capacity, though greatly retarded by the hot weather and labor conditions. All report orders on hand for their entire product for some time to come. No change in the price of Soil Pipe has been mad since the recent advance of Iron, but it is the opinion of t manufacturers that an advance of $2 to $3 will be made in the near future. Quotations on Water Pipe are approximately as follows: 4 to 6 in., $30; 8 to 12 in., $29; over 12-in., $27.50, with $1 per ton extra for Gas Pipe.

**Old Material.**—The market is rapidly improving, more inquiries having been received this week than for some time. Prices have advanced, in some instances from $1 to $1.50 per ton. We revise dealers' quotations, as follows:

| | |
|---|---|
| Old Iron Rails | $19.50 to $20.00 |
| Old Iron Axles | 18.50 to 19.00 |
| Old Steel Axles | 16.00 to 17.00 |
| Old Car Wheels | 16.50 to 17.50 |
| No. 1 Railroad Wrought | 16.50 to 17.00 |
| No. 2 Railroad Wrought | 14.50 to 15.00 |
| No. 1 Country Wrought | 14.50 to 15.00 |
| No. 2 Country Wrought | 11.50 to 12.00 |
| Wrought Pipe and Flues | 11.50 to 12.00 |
| Railroad Malleable | 13.00 to 13.50 |
| No. 1 Steel | 13.50 to 14.00 |
| No. 1 Machinery Cast | 13.50 to 14.00 |
| Stove Plate and Light Cast | 10.00 to 10.25 |
| Cast Borings | 7.00 to 7.50 |

## New York.

NEW YORK, September 5, 1906.

**Pig Iron.**—The excitement in the Foundry trade has abated somewhat. There have been liberal sales of Southern Pig Iron in this district for future delivery on the basis of $15 for No. 2 at Birmingham. There is some eager inquiry for spot Iron, for which Northern furnaces demand from $19.75 to $20.50 for No. 2, but the volume of business done on this basis is moderate. There is less inquiry than there has been for forward delivery, which is available at $19.25 to $19.75. We quote Northern Iron, prompt delivery, for No. 1, $20.25 to $20.75; No. 2, $19.75 to $20, and No. 2 Plain, $19.25 to $19.50. Southern Iron is sold on the basis of $19 to $19.50 for No. 2.

**Steel Rails.**—The orders now being placed are not nearly so numerous as during July and August. Most of the large systems have made their arrangements as far as they care to do so at present and orders now being received are mainly from the smaller lines. Occasionally, however, a large railroad company places some additional contracts. Instances of these have occurred the past week when the Southern Railway Company and the Chicago & Northwestern re-entered the market. The former bought 30,000 tons more, dividing the business between two mills. Of this quantity 10,000 tons will be delivered this year and the remainder goes to next year's account. The Chicago & Northwestern bought an additional 10,000 tons. The Chicago & Milwaukee Electric bought 3000 tons for 1907. Quite a number of inquiries are in hand which may shortly result in contracts. The Isthmian Canal Commission is receiving bids to be opened September 6 for 5000 tons of 70-lb. rails. The price of standard sections is unchanged at $28 at mill.

**Structural Material.**—Manufacturers of Structural Steel report the demand strong and well distributed. The contracts being placed indicate that buyers feel confident that prices will be maintained far into the future. The fabricating companies have not added much to the actual work on their books during the week. Among the contracts closed were the following: The Pittsburgh Plate Glass Company, 1500 tons, for an additional building; the Carnegie Steel Company, 1900 tons, for additional buildings; Edward Ford, Detroit, a 4000-ton building; a building in San Francisco, 1200 tons; a building in New York, 800 tons. The American Bridge Company reports its August business aggregating 55,000 tons, which is very good for a summer month. The large undertakings to which reference has recently been made in these reports are all rapidly approaching the time when contracts will be closed, while others are beginning to assume shape. The passage of the vacation season will probably have a great deal to do with the hastening of these matters. We quote as follows on mill shipments, delivery at tidewater points: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. On Beams 18 to 24 in. the extra is 0.10c., and on Angles over 6 in., 0.10c. Beams and Channels out of stock are sold at 2.40c. to 2.50c.

**Bars.**—The market continues active and contracts are now being quite freely placed for both Iron and Steel Bars. As far as can be learned, the strike situation among the Eastern rolling mills is unchanged. This still restricts the supply of Bar Iron. Bar Iron manufacturers are crowded with work. Prices are firm at 1.64½c. tidewater for Steel Bars and 1.74½c. for Iron Bars.

**Plates.**—A contract has about been closed with a Pennsylvania mill for a large quantity of ⅜-in. Steel Plates for the lining to the two tubes of the Michigan Central Railroad's Detroit tunnel. This tunnel is 4000 ft. long, and therefore the contract covers 8000 lineal feet to be lined with such Plates, which will require a large tonnage. The general demand in this vicinity has been showing some improvement recently, and the volume of business now being placed from day to day is quite satisfactory. Prices continue as follows at tidewater on mill shipments: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

**Cast Iron Pipe.**—The condition of the trade is shown by the statement of a leading company that it can deliver no 6-in. Pipe this side of January and no 4-in. Pipe before December 15. It is understood that all the other Pipe manufacturers are practically in the same state. The demand still keeps up. One consumer is now asking for a bid on 2000 tons for spring delivery. The chances now seem to be strong that Pipe manufacturers will not be able to make any considerable stock of Pipe this winter to meet next season's requirements for quick shipments of small lots. Prices are higher, and $32 per net ton on 6-in. at tidewater is minimum.

**Old Material.**—Inquiries have been received this week for 10,000 to 15,000 tons of Scrap Steel. The local supply is not in condition to meet such a demand. It is estimated that not over 2500 tons of this class of material is now in stock or immediately available in this vicinity, and even this is said to be under contract. The stock in New York and vicinity a year ago was probably not less than 40,000 tons. Some of the rolling mills have been purchasing a little more freely of late, but others, as well as some of the large steel manufacturers, are keeping out of the market for the purpose of trying to hold prices in check. The railroads, however, are offering very little old material and the dealers are evidently more in control of the situation. Nobody is willing to sell now for ten days ahead. Chances will not be taken on a shortage of the supply in the near future. Everything in the line of Cast Scrap is exceedingly strong. Quotations for New York and vicinity are approximately as follows:

| | |
|---|---|
| Old Iron Rails | $22.00 to $22.50 |
| Relaying Rails | 26.50 to 27.00 |
| Old Steel Rails, rerolling lengths | 18.00 to 18.50 |
| Old Steel Rails, short pieces | 16.00 to 16.50 |
| Heavy Melting Steel Scrap | 16.00 to 16.50 |
| Standard Hammered Iron Car Axles | 26.50 to 27.00 |
| Old Steel Car Axles | 20.50 to 21.00 |
| No. 1 Railroad Wrought | 19.00 to 19.50 |
| Iron Track Scrap | 17.00 to 17.50 |
| No. 1 Yard Wrought, long | 17.50 to 18.00 |
| No. 1 Yard Wrought, short | 16.50 to 17.00 |
| Wrought Pipe | 13.00 to 13.50 |
| Light Iron | 9.50 to 10.00 |
| Cast Borings | 9.75 to 10.25 |
| Wrought Turnings | 12.50 to 13.00 |
| Old Car Wheels | 17.75 to 18.25 |
| No. 1 Machinery Cast | 16.00 to 16.50 |
| Stove Plate | 11.50 to 12.00 |
| Grate Bars | 11.00 to 11.50 |
| Malleable Cast | 15.75 to 16.25 |

Herman Nieter, sales agent of the Hammond Iron Works, manufacturer of Tanks, Riveted Steel Pipe, chimney and other Plate construction, has removed his office from 180 to 29 Broadway, New York.

## Metal Market.

NEW YORK, September 5, 1906.

**Pig Tin.**—The market has been quieter even than during the two weeks preceding. Every day but Thursday of last week sales have amounted to but a few scattering lots. On that day, however, there was a fair business done at 40.45c., while on Friday the price was advanced to 40.70c. On Monday the London market reacted slightly on the publication of its statistics, so that Tuesday's price in this market was lower at 40.40c. What little business there is is being done from stock, although Tin out of the Minnetonka, which is to arrive next Monday, can be obtained at slight concessions. To-day's price is higher at 40.60c. The London market closes to-day at £185 for spot and £184 7s. 6d. for futures. The statistics as compiled by C. Mayer, secretary of the New York Metal Exchange, show that the total visible supply August 31 was 12,840 tons, against 12,184 tons at the end of the preceding month and compared with 12,572 tons a year ago. The total American deliveries for the first eight months of this year show an increase of 700 tons compared with the same period last year. Deliveries of London and Holland for the eight months show a decrease amounting to 1399 tons compared with the same period last year. The arrivals so far this month are 240 tons, and the afloats are 3150 tons.

**Copper.**—The scarcity of Copper, coupled with the enormous domestic and foreign demand, has compelled mining companies to advance their quotations ⅛c. to ¼c. per pound during the week. Copper for delivery during any month this year is scarce, but October and November is in particularly good demand and very hard to obtain. Lake Copper is quoted at 18.87½c. to 19.12½c., with little metal to be had at the inside price. Electrolytic cannot be had at less than 18.75c., and Casting Grades are only obtainable at 18.37½c. For quick deliveries premiums would probably be asked. Owing to the advance in raw material makers of Copper Wire have advanced prices, and are holding Bare Copper Wire at an advance of ¼c., or 20.25c. base, f.o.b. mill in carload lots. This new quotation was effective August 31. As outlined in our report of last week, the exports for the month of August were very heavy, aggregating 20,033 tons of Copper, excluding Southern and Pacific ports. The total exports for the first eight months of this year show a decrease of approximately 30,000 tons as compared with the same period in 1905. It is more than probable, however, that exports during the last four months of the year will show an increase as compared with last year, consequently the situation here will become more acute. T

imports of Copper for the month of July were 8520 tons, and for the first seven months of this year aggregated 59,625 tons, against 51,250 during the corresponding period last year. It is well known that some of the larger selling companies were opposed to advance prices above 18.50c. for Electrolytic, but have taken this step to prevent speculation. The London market closes to-day at £86 7s. 6d. for spot, and the same price is asked for futures.

**Pig Lead.**—The market is much stronger and decidedly higher in London. The New York market can be quoted at 5.85c. to 5.90c., and Lead is hard to obtain at the inside price. The St. Louis market is firm at 5.75c. Advices from the Joplin district are to the effect that another 50c. advance has been made in the price of Ore. The London market is quoted at £17 12s. 6d., equivalent to about 6.02½c., c.i.f. New York. The total imports for the first seven months of this year were 49,676 tons, against 53,329 tons during the same period last year.

**Spelter.**—The market is steady and business is slightly better. The market in New York is quoted at 6c. to 6.10c., and in St. Louis at 5.92½c. In London prices are unchanged at £27 5s.

**Steel Alloys.**—The scarcity of Ferromanganese continues, with little being obtainable at first hands for the balance of the year. For prompt shipments, $85 is quoted at seaboard, while November and December can be had at $82.50 to $85, and deliveries during the first three months of next year at $77.50 to $80. For 50 per cent. Ferrosilicon, $92.50 to $95 is quoted, and for deliveries during the first three months of next year $92.50.

**Antimony.**—The market continues firm and all brands are scarce, no large lots being obtainable. Cookson's is nominally quoted at 25c. and Hallett's at 24c., but concessions might be made from these prices. Outside brands can be had at 22.50c. to 23.50c. The total imports of Antimony for the first seven months this year amounted to 1941 tons, compared with 1212 tons during the same period in 1905.

**Aluminum.**—Prices are unchanged, No. 1 Ingots being obtainable at 36c.; No. 2 at 34c. per lb.

**Nickel.**—There is no change in the market, although there seems to be a plentiful supply for present needs, large lots being quoted at 45c. and smaller quantities at 55c. to 65c.

**Tin Plate.**—There is an excellent demand from almost all parts of the country; probably sufficient to keep a large share of the mills running were it not for the shortage in Steel and Pig Iron. Prices are unchanged, and for 14 x 20, 100 lb., IC Coke Plates, $3.94, is quoted, f.o.b. New York, and $3.75, f.o.b. Pittsburgh.

**Old Metals.**—The supply is not equal to the demand and prices are going up rapidly. Advances have been made all through the list, ranging from ⅛c. to ½c. per lb. Dealers' selling prices are as follows:

| | Cents. |
|---|---|
| Copper, Heavy Cut and Crucible | 18.00 to 18.25 |
| Copper, Heavy and Wire | 17.75 to 18.00 |
| Copper, Light and Bottoms | 16.25 to 16.50 |
| Brass, Heavy | 12.75 to 13.00 |
| Brass, Light | 10.25 to 10.50 |
| Heavy Machine Composition | 16.50 to 16.75 |
| Clean Brass Turnings | 11.25 to 11.50 |
| Composition Turnings | 13.75 to 14.00 |
| Lead, Heavy | 5.25 to 5.50 |
| Tea Lead | 5.00 to 5.25 |
| Zinc Scrap | 4.40 to 4.60 |

## Iron and Industrial Stocks.

NEW YORK, September 5, 1906.

The upward course of the stock market has been checked by an advance in the rates of interest on call loans to the highest figures seen in September for many years. This admonishes the speculative element that the financial resources of the country are being heavily drawn upon for moving the crops. While the Iron and Steel stocks have not been seriously affected, so far as prices are concerned, the volume of transactions has fallen off quite sharply. Fluctuations during the week were within such narrow limits that it is unnecessary to give their range. Last transactions on active stocks up to 1.30 p.m. to-day were made at the following prices: Can common 2, preferred 60½; Car & Foundry common 39¾, preferred 101; Locomotive common 71; Steel Foundries common 10¾, preferred 43¾; Colorado Fuel 55½; Pressed Steel common 53¼, preferred 97½; Railway Spring common 54; Republic common 29¾, preferred 99½; Sloss-Sheffield common 76½; Tennessee Coal 156; United States Steel common 46⅜, preferred 106¾.

**Dividends.**—General Electric Company has declared the regular quarterly dividend of 2 per cent., payable October 2.

The American Can Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable October 1.

## Electric Power on the Farm.

The *Electrical World* gives the following description of the use of electrical power in Illinois on farms along the route of the Aurora-Elgin & Chicago Electric Railway. The railroad simply furnishes the power, while the installation was done by local electrical contractors. Within five or six miles of Elgin there are about 15 installations, and others are scattered along the line. The district around Elgin is noted for its dairy products, and the motors are in most cases employed to drive feed crushing and grinding machinery. In almost every instance the motor is installed in a detached building, and a chute is provided for protection to the belt, which drives the line shaft in the building in which the machinery is installed. In installing the motors every precaution has been taken to protect them from the weather, and to prevent possible damage to the wiring. The houses covering them are built tight, to avoid the possible entrance of water, and are lined inside with sheet asbestos. A meter is installed in the house with each motor, which is usually of 15 hp. capacity. The total cost of installation of a motor is about $600. This includes the cost of erection of the building, cost of the motor, the expenses of running the line from the tracks of the railroad, and the work of installing the wiring and connecting up. The rate charged by the railroad company is usually 4 cents per kw. hour. In one instance, the cost of the energy used in grinding corn for 50 cows and sawing wood, &c., was $2 per month. The cost was about one-half cent per bushel for grinding corn.

The farmers are all highly pleased with the performance of the motors, as practically no trouble has been experienced with any of them. All the care that the motors have required has been that of oiling them at frequent intervals and renewing the brushes once or twice a year. Power for the motors is taken direct from the trolley and carried on pole lines to the motor house. The advantage to a railroad company having surplus power of supplying such service can readily be seen, as local firms can be induced to make the installations, and then all the company is required to do is to read the meter and collect the bills.

Four prizes, aggregating $1000, are offered by the Merchant Marine League of the United States, at Cleveland, Ohio, for the best essays on "How to Build up Our Shipping in the Foreign Trade," only students in high schools, technological schools, colleges and universities in the United States being eligible to compete. There will be one prize of $400, one of $300, one of $200, and one of $100. The contests will close about November 15 and the prizes will be awarded about December 15, 1906. The Merchant Marine League is devoted to the upbuilding of the maritime interests of the United States and has been formed by men having no direct or personal interest in our deep sea shipping, but who are imbued with a patriotic desire to aid in hastening the enactment of such legislation as will place American ships once more upon the seas.

At a meeting of the stockholders of the Southern Steel Company in New York on Tuesday, the capital stock was increased from $16,000,000 to $25,000,000. The common stock was increased from $10,000,000 to $15,000,000 and preferred from $6,000,000 to $10,000,000. The increase was made to take over the properties of the Lacey-Buek Iron Company, Birmingham, Ala., and the Chattanooga Iron & Coal Company, Chattanooga, Tenn. The merger will be effected on Friday. This gives the Southern Steel Company two more modern blast furnaces and additional rich ore fields, besides coal mines near Birmingham with 350 coke ovens.

An attempt to corner the tomato market has brought to grief some 40 Maryland packers of canned goods. Many of them will be forced into bankruptcy. It is believed that banking interests have protected themselves against disaster.

## The G. E. Single-Phase Induction Motors.

The field for single phase motors of moderate capacity grows with the tendency of central stations to generate polyphase current and feed a large portion of the lighting load through single phase distribution. Power is frequently required near such circuits for operating machinery, and may be had by installing single phase motors, such as the General Electric Company's Type IS, Form KG.

These new motors are similar in design and appearance to the company's polyphase induction motors. The frames are cylindrical with removable end shields, the position of which can be shifted for wall or ceiling suspension. The fields are thin punchings of soft steel assembled under heavy pressure between the end frames. Since this motor has no complicated, internal, automatic devices for starting, the machine is of simple mechanical construction.

The armatures are of high resistance squirrel cage type, consisting of a number of slotted soft steel disks assembled upon a shaft and carrying in the slots copper bar windings, which extend beyond the core at each end, and are permanently connected to short circuiting rings. The field windings are similar to those of a three-phase motor, consisting of a large number of coils placed progressively in the slots. Some of the motors are fitted with three terminals, while others have six terminals. The feet of the ¼ and ½ hp. sizes are slotted for belt tightening, while the larger motors have iron sliding bases for that purpose. All bases are designed for supporting motors when installed on floor, side wall or ceiling. Motors of 1 hp. and larger are fitted with clutch pulleys, so that they can be started under full load while drawing only two to two and one-half times full load current. The clutch is arranged so that pulleys of various diameters may be substituted for the ones ordinarily supplied.

The motors are self-starting through a starting box containing a resistance and reactance and a double-throw switch. This is first thrown to the starting position, which puts the resistance and reactance in circuit with the motor, and when the armature has attained almost full speed is quickly thrown over to running position, cutting out the resistance and reactance.

In the case of motors provided with six leads, the winding connections are changed through the starting box at the time of throwing over the switch from Y to delta connection. By this arrangement a starting torque of approximately 15 per cent. is obtained with 20 per cent. of full load current. The small motors without clutch pulleys develop a starting torque of approximately 125 per cent. of full-load torque. The speed of an induction motor is regulated by the frequency of the supply circuit, and is not materially affected by variations of voltage, so that the motors will operate at full load at from 2 to 5 per cent. less than synchronous speed.

The standard motors are wound for 110 or 220 volts, 60 cycles, in sizes from ¼ to 5 hp., inclusive. The standard winding for larger motors is 220 volts. Satisfactory operation can be expected over a range of voltage or frequency, considered together, of 15 per cent. either above or below normal. In addition, motors of all sizes with special windings and accessories for 50 cycle, and from ¼ to 1 hp., inclusive, for 40-cycle circuits can be furnished to order.

When these motors are operated from the regular lighting circuits no appreciable effect is produced upon the lamps, providing the circuits are well laid out and supplied with sufficient transformer capacity; or, if preferred, they can be placed upon separate transformers. In either case, 1 kw. of transformer capacity should be allowed per horsepower of motors installed.

These single-phase motors are well adapted to the driving machinery by belts and gears, or may be directly connected with rigid couplings, where the loads require only moderate starting torque, as for governors, blowers, &c. When greater torque is required at starting, as for pumps under head, clutch couplings should be used. When gearing is to be employed the ordinary pulley can be removed from the clutch sleeve and a pinion substituted. This is preferably made of rawhide to reduce noise.

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The heating of air might as logically be accomplished by the economizer plan as in the heating of feed water, and the heated air used for warming and ventilating buildings or in drying processes. It is interesting to note that such an application has recently been made in an air heater constructed substantially like the older apparatus, except that the air takes a different path than that taken by water through an economizer. In the latter the water enters at the bottom and passes out from the top, whereas in the air heater the air is forced by a fan first down through one set of tubes and up through another set, and so on, until it leaves the heater. This air heater is placed in the flue passages, and its performance under recent tests is said to have been very satisfactory.

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A detail of construction which has to do with noisy gearing is the depth of the tooth spaces. In this respect gears are more often cut too deep than not deep enough, and it is worse to have the driver too deep than the driven gear. Another cause of noise may be that the cutting is not central, as shown by gears being noisy when running one direction and quiet in the reversed direction. Again, the center distance may not be right; if meshing too deep, the outer corners of the teeth of one gear may strike hard against the roots of the teeth of the other gear. Still another cause of noise may be found in the fact that the frame carrying the gear shafts is of such a form and size as to give off sound vibrations.

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After an accident to a flywheel in a large European electric station the superintendent designed and had constructed a flywheel of wood which has a diameter of over 35 ft. and a rim width of 10 ft. The thickness of the rim is about 12 in. and it is made up of 44 thicknesses of beech planks, with staggered joints. The boards were glued together and then bolted. The inside consists of a double wheel, the 24 spokes of which are fastened to two hubs. Spokes and hubs are of cast iron. The wheel is operated at 76 rev. per min., which corresponds to a peripheral speed at the rim of 139 ft. per second (94 miles per hour). This is said to constitute a record for wooden flywheels.

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On Saturday, September 1, the new blast furnace, which makes the fourth of the group of the Joliet plant of the Illinois Steel Company, was blown in. This stack will have a daily output of 500 tons, and will operate on Bessemer iron exclusively. The stack, with its four stoves, was built in record time, only seven months and nine days having elapsed from the date that advices were received to proceed with its erection. This period not only encompasses the actual construction of the erection of the stack and its four stoves, but its designing as well.

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Contracts for four turbine pumps, having a daily capacity of 25,000,000 gal. each, have been awarded by the Indiana Steel Company, Gary, Ind., to the Pratt Iron Works, Dayton, Ohio. This plant will ultimately contain six pumps having a combined daily capacity of 150,000,000 gal. The pumping plant is designed for use by the blast furnaces and steel works exclusively, a separate installation now being designed to provide water for the city. These pumps will be driven by Westinghouse motors, contracts for four 600 hp. capacity each having already been awarded.

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The Japanese Government is said to be preparing a 15-year programme of railroad construction, which will include the completion of all the important railroads and the establishment of large works for the furnishing of material and supplies.

# The Machinery Trade.

NEW YORK, September 5, 1906.

Although the week was broken in twain by the holiday there was apparently no falling off in either inquiries or orders. The principal development was the awarding of the contract to a New York company for the construction of the Detroit tunnel, which will necessitate the purchase of a large amount of mechanical equipment. The return of Daniel Guggenheim, president of the American Smelting & Refining Company, from Alaska is of interest, because it is expected that the interests with which he is allied will soon begin more active operations in the Northwest, which will necessitate the buying of a great deal more machinery. It is understood to be Mr. Guggenheim's intention to equip several mines which he controls in that territory with up to date machinery.

### The Detroit River Tunnel.

The feature of the week, and one of the most important pieces of work closed for some time, was the awarding of the contract to the Butler Brothers & Hoff Company, 1170 Broadway, New York, for the construction of the tunnel under the Detroit River to be used by the Michigan Central Railroad. This tunnel will be 7860 ft. long, consisting of two tubes, to connect Detroit, Mich., and Windsor, Ont. In submitting bids contractors were given the privilege of figuring on several plans of construction, but those devised by Chief Engineer Wilgus of the New York Central Railroad were decided upon. The tunnel is to be constructed of concrete, and will consist of two tubes lined with ⅜-in. steel plates. It will be 40 ft. below the river bed. For the completion of such a large undertaking it is likely that the company which secured the contract will require a large amount of machinery. During the past few days its representatives have been visiting the trade, securing quotations, &c., and it is understood that but little if any of the machinery has been purchased. It will be remembered that the contractors who are building the North and East river tunnels were large purchasers of mechanical equipment, and the requirements for this new work will undoubtedly be duplicates of what is now being used on the tubes going out of New York. The contract for the tunnel does not include the power equipment for operation, but simply the construction of the tubes. To the machinery trade the equipment for operating the electric zone in connection with the tunnel is quite as important as the tunnel work. Bids for the electric equipment were opened a day or so ago, and it is likely that in about six weeks the contract will be let for this machinery, of which large horsepower will be needed to operate the electric zone, which is to cover about 4½ miles. In requesting bids for the power equipment contractors were asked to bid on the installation of a sufficient plant to operate the cars, the horsepower, number of units and other details being left to them. It is evident from the course pursued in asking for bids that the entire work will be given to one company as a blanket contract, and this company will buy and install the necessary machinery for putting the plant in complete operation. The Advisory Committee of Engineers, consisting of W. J. Wilgus of the New York Central, Howard Carson of Boston and W. G. Kinnear of the Michigan Central Railroad, which drew up the specifications, decided in a general way upon the principal machinery that is to be used. This equipment will include water tube boilers, turbo generators or other prime movers, surface condenser, electric traveling cranes, boiler feed pumps, horizontal feed water heaters, turbo exciters, induction motors, exciters, mechanical stokers, coal and ash handling machinery, and five submerged vertical centrifugal pumps direct connected to motors. There will also be required eight electric locomotives for hauling freight and passenger trains, and a large quantity of other accessories that generally go into the make-up of a complete electric system. In connection with an undertaking of this magnitude there will probably be erected repair shops the equipment for which will entail the expenditure of considerable money. The contractor whose bid is accepted for the power plant is to install the plant complete and is to operate it for one month to the entire satisfaction of the railroad company. In connection with the construction of this tunnel and power plant it is of interest to note that this is only one of the great improvements which the New York Central lines are undertaking, and which will call for the outlay of a great amount of money. Almost daily the trade is looking for a machine tool list from the New York Central which is known to be about completed, and it is expected that large purchases will be made very soon for the equipment for the extensive shops to be erected at Indianapolis, Ind., for the Big Four Railroad. The Butler Brothers-Hoff Company, which secured the contract for the tunnel, is the new name for the Butler Brothers Construction Company, the change being made so as to include the name of Mr. Hoff, who is vice-president.

The Pennsylvania tunnel being constructed under the North River by the O'Rourke Engineering Construction Company, New York, is expected to be completed by September 18. The two tubes, which were started from either side of the river, are about 125 feet apart, and work has been stopped for a few days so that the engineers can make an examination and determine how accurate the preliminary surveys were. The review of the work will be under the supervision of Charles M. Jacobs, chief engineer, and James Forgie, principal assistant engineer of the North River tunnel work. If the calculations of the engineers have been correct the two sections of each tube will meet in perfect alignment.

### Machinery Requirements.

Plans are being prepared by the engineers of the Grand Trunk Railway System for the construction of extensive shops at Battle Creek, Mich., which will include 10 or 12 buildings.

Although plans for the car shops for the New York, Westchester & Boston Railway Company, whose main offices are at 30 Broadway, New York, have not been prepared as yet, the company has about decided to build a plant large enough to take care of 200 cars, and a site has been practically decided upon at Mt. Vernon, N. Y. As is known in the trade, the company has been purchasing a large amount of equipment of late, although none of it has been for the proposed car shops. The work of building the line has not gone forward as rapidly as the company's engineers had hoped, as it was expected by this time that the plans for the machine shops would be prepared and work on the structures under way. The equipment for the company's main power stations has been arranged, although as yet the contract has not been finally let. Chief Engineer W. H. Pratt said this week that it would probably be given out within a few days, and it is understood that it will be let as a blanket contract. The power house will be of about 15,000-kw. capacity, and a long list of equipment was put before the trade some time ago. Most of the prominent New York houses in that line have submitted bids. The company has purchased 38 lots on Lorraine avenue at Mt. Vernon, which will be used for a station, and it is estimated by the engineers that the company will spend altogether about $2,000,000 for other stations, bridges and like structures. The construction of the power house will be begun very shortly, and it is said that just as soon as this work is well under way the matter of building the machine shop will be taken up. The company's system will include about 105 miles of track, and it will be a four-track electric road. Most of the buying is being done by the City & County Contracting Company, which also has offices at 30 Broad street, and is closely allied with the railroad company.

The Rossiter-McGovern Company, 17 Battery place, New York, has contracted to build an electric railroad 27 miles long for the Suffolk Traction Company, Patchogue, L. I. The road will extend from Babylon to Brookhaven, L. I., and the power equipment will consist of a central power station and two substations. The power station will be of about 1000-kw. capacity, but the plans for that and the substations have not been entirely completed as yet. It is thought that at first the company will operate about 10 cars, but later on will extend its system. J. C. Breckinbridge, who is connected with the Rossiter-McGovern Company, has charge of the arrangements for the construction of the line and he will probably do the buying. None of the equipment has been purchased as yet.

The American Standard Mfg. Company, 141 Broadway, New York, which has been organized with M. B. Converse as president to manufacture general hardware and which will later on build a large plant at Somerville, will come into the market very shortly for some machinery to be installed in a temporary plant near New York, as it is the company's intention to begin the manufacture of its products in a small way and later on extend. At present the company will purchase three or four large milling machines, the biggest of which will weigh 4000 lb., some upright hammers, one or two shapers, two universal milling machines and one or two 8-ft. lathes for use in the tool room. The company is capitalized for $750,000. One of its plans in securing subscriptions is to offer stock to hardware dealers, and all subscribers in that business who are holding 20 shares or more will be entitled to receive a rebate of from 5 to 10 per cent. on all purchases of goods bearing the company's brand. Sufficient stock has been subscribed by interested parties in Somerville to build the plant, but operations will not be begun on that work until the entire sum has been secured which, it is expected, will occur by next spring. The company expects, ultimately, to build at Somerville two parallel buildings, each 50 ft. by 200 ft., joined in the center by a building 50 x 75 ft. There will be a boiler and engine house and an office building, both of which will be disconnected from the main structure. Mr. Converse, president of the company, was formerly superintendent of the Tower & Lyon Mfg. Company, Bloomfield, N. J. L. H. Swind is vice-president and Charles A. Wessel, secretary and treasurer.

Hitchings & Co., 1170 Broadway, New York, manufacturers of green houses, have plans prepared for an exten-

sive plant to be erected at Elizabeth, N. J., and Dean & Main, 53 State street, Boston, Mass., are the architects and engineers. The plant will include seven buildings one and one-half stories in hight and most of them will be of brick and stone. The dimensions of the respective structures will be 34 x 149 ft., 66 x 119 ft., 60 x 205 ft., 99 x 320 ft., 60 x 205 ft., 100 x 150 ft. and 40 x 50 ft. The power plant will include two 200-hp. engines and two 150-kw. generators.

During the past year many car manufacturing companies have greatly enlarged facilities by the erection of additions or entire new works to meet the large demand that has developed for both passenger and freight cars. For some time the Seattle Car Mfg. Company, Seattle, Wash., has had under consideration the erection of a new plant. It has now selected a site near Renton, a suburb of Seattle, where it will construct a new plant to be equipped with modern machinery and capable of turning out all classes of standard railway equipment. The capacity at the start will be 10 cars a day. The capital stock of the company will be increased to $500,000 to take care of the improvements the company is planning to make. William Pigott is president; M. J. Pigott, vice-president; D. E. McLaughlin, treasurer, and T. G. Haywood, secretary and general manager.

Contracts will be let this fall by the Couple Gear Freight Wheel Company, Grand Rapids, Mich., for the necessary machinery to equip improvements it is to make to its plant at a cost of about $40,000. Plans are now in course of preparation for the erection of several additions to the plant which will double the present capacity.

The trade will shortly hear of a goodly list of equipment for a $16,000 water works to be constructed for the village of Holland Patent, N. Y. The municipality has decided to go ahead with the project, and W. G. Stone, who has offices in the Mann Building, Utica, N. Y., is the consulting engineer. He is preparing the plans and it is said that bids will be called for some time this week.

W. S. Barstow & Co., consulting engineers, 56 Pine street, New York, will purchase 1200 hp. of electric motors for the Jamestown Worsted Mills, Jamestown, N. Y., which is making some alterations to its plant.

The Northern Electric Street Railway Company, Scranton, Pa., has closed out the contracts for the equipment for its proposed power house at Dalton, Pa. The Hooven, Owens, Rentschler Company got the contract for two 900-hp. engines, and the Westinghouse Electrical Mfg. Company will furnish all the electrical equipment.

The Case Mfg. Company has through its New York office, 35 Liberty street, sold a 30-ton 70-ft. span crane to the Ridgeway Dynamo & Engine Company, and a 5-ton 58-ft. span 3-motor crane to the Whitlock Coil Pipe Company, Hartford, Conn.

The American Woodworking Machinery Company closed out some extensive business during the week for its new plant near Rochester, N. Y. The power men got a good slice of the business, as the equipment purchased, it is understood, was for a large power plant.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, September 4, 1906.

The exhibits of local manufacturers at the seventh annual fall festival now being held at Music Hall and Washington Park are possibly not so large as in former years, but those represented are quite attractive and are of more than passing interest. The Lodge & Shipley Company shows two of its large motor driven patent head lathes of the most approved design and latest pattern; D. T. Williams Company has a fine exhibit of automobiles, its special auto car limousine being equipped with both a summer and winter body; Lunkenheimer Company, complete display of all valves, lubricators and steam specialties; Victor Safe & Lock Company, a number of its new spherical manganese steel screw door bank safes. Another of the interesting sights is the exhibit of the Chicago Pneumatic Tool Company, consisting of a complete line of portable air cooled electric drills ranging in capacity from 0 to 2½ in. for drilling and reaming, also its Magnetic Old Man grinders and buffers. The exhibit of the J. A. Fay & Egan Company is perhaps the largest on the floor and consists of band saws, molding sticker for interior finish, smoothing planer and hollow chisel mortiser for boring square holes.

In conversation with P. E. Montanus, secretary of the National Machine Tool Builders' Association, in regard to present conditions, Mr. Montanus says: "The summer has been so active with machine tool builders that there has been very little exchange of ideas or new work developed. The condition of trade, however, is such that every one is busy as can be and while I am sure there will be no concerted action on the part of the National Machine Tool Builders in convention to make any advance or agreement in prices, nevertheless I am assured that many individual manufacturers have increased their prices independently of any action taken by their friends or competitors. The necessity for doing so is apparent in so far that the item of wages is on a constant increase and with a certain amount of skilled labor will probably continue until there is a cessation of the very active demand now existing. The next convention of the association will be held as usual in the fall in New York, headquarters to be announced later, as well as the exact date, which has not yet been determined. The demand for machine tools from abroad continues very fair, and as the present unequaled prosperity seems to be universal, there is every reason to believe that business both at home and abroad will continue to be of large volume and the manufacturer who is able to name prompt deliveries is in unusual good luck."

The Cincinnati Frog & Switch Company, capitalized at $200,000, was incorporated at Columbus this week by Charles Partington, for a number of years general manager of the Weir Frog Company; George Ashton, recently assistant engineer of the American Frog & Switch Company, Hamilton, Ohio; Herman Erdman of the G. A. Gray Company, E. R. Heitzman and A. E. Endebrock. The company has purchased 5 acres of ground adjoining the Factory Colony's sight in Oakley, and will commence the erection of a large plant just as quickly as certain of the plans are perfected. This tract is located just north of the Baltimore & Ohio Southwestern Railroad. Switches will be guilt connecting the plant and shipping facilities will be unequaled. As this is an entirely new company it will be necessary to purchase a full line of machinery for equipping the plant, work on which will begin within the month.

The Atlas Engine Works, Indianapolis, whose Chicago sales offices have for several years past been in suites 900-902 Fisher Building, will upon completion of the new Fisher Building in November increase the present rather cramped quarters by the addition of several larger offices. Frank H. Baker, connected with the company for over 20 years, will continue at the head of its Chicago office. J. P. Johnston, for several years past the general sales manager for the Weber Steel Concrete Chimney Company, Chicago, has resigned to become sales manager of the water tube boiler department of the Atlas Engine Works, with headquarters at the plant at Indianapolis. J. F. Davis, formerly connected with the Pittsburgh office, has been transferred to the offices at Chicago.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., September 4, 1906.

Sales of machine tools have improved to some extent, and the business transacted during the last week in August was in a number of instances sufficient to bring the average for the month up to a fairly good volume, reaching in some cases a total hardly anticipated for a midsummer month. Most of the business placed has been for single tools, such as could be had either from stock on dealers' floors or on comparatively fair delivery. It is to be noted that the supply of tools for exhibition and demonstration purposes is much better than it has been for some time. Manufacturers in a number of lines have evidently been able to squeeze through a few tools for such purposes, and while warehouse stocks are not large, dealers have at times sold such tools on their floors where it was absolutely necessary to do so to satisfy the customer. This, however, cannot be said to apply where more than one tool of a size may be required. In such cases it is generally necessary to wait for the best delivery that can be made from the factory, which on the whole shows but little indication of improvement.

A few of the orders for the tool equipment of the Knoxville shops of the Southern Railway Company were placed last week in this territory. The bulk of the business, however, was placed elsewhere. The Baldwin Locomotive Works also placed an order for a fair lot of tools with one of the local concerns. Outside of these no business of any magnitude was transacted.

The outlook for business during the fall months appears exceedingly bright. Among other business that is expected to be closed at an early date is the equipment for the addition to the plant of the Standard Roller Bearing Company in this city. This will aggregate something like $150,000 worth of tools, specifications covering which will be out at an early date. Several Southern railroads are understood to be almost ready to buy, one going so far as to ask for approximate estimates on quite a fair lot of tools. A number of individual concerns in the South are shaping their plans to buy tools during the fall months, and while the individual purchases may not be large the aggregate will no doubt result in a good volume of business.

The foreign demand for tools and machinery is practically unchanged. Little business in the line of standard tools is being taken on, although orders for special tools and machinery continue fairly satisfactory. Machinery specialties continue in about the average demand for the season of the year.

The month of August has, as a rule, not been a very satisfactory one to the manufacturers of boilers and engines. Merchants doing a business in new and second hand boilers and engines report business dull, although there seemed to be considerable in sight. Lately orders have been coming in more freely, and it is anticipated that, inasmuch as the vacation season is practically over, business in this line will show a material improvement. The demand for second hand machine tools is quite active, and will no doubt so continue as long as new tools cannot be had more promptly, provided, of course, the dealers are able to keep up their stocks of desirable tools, which in a number of instances is said to be pretty hard to do.

There is no change in the foundry situation. Both steel and gray iron casting plants have practically all the business they can conveniently handle. Steel plants are in most cases working overtime, and at that find it difficult to make good deliveries. Some little complaint is heard from machinery builders as to the delayed deliveries of gray iron castings, although these are not as bad as in the case of steel castings. Foundries are all running on full time, and probably the largest tonnage ever made is now being produced.

The Standard Roller Bearing Company, whose plant is located at Forty-eighth street and Girard avenue, has purchased the entire property of the Pennsylvania Iron Works Company, at Fiftieth street and Lancaster avenue. This property extends some 1500 ft. along the Pennsylvania Railroad Company's main line, is 150 ft. wide and contains five factory buildings with an aggregate floor space of over 100,000 sq. ft. It adjoins the present property of the Standard Roller Bearing Company, and, together with the present plant, will give the company 500,000 sq. ft. of working floor space. Machinery for installation in the new plant is to be purchased. This will cost, it is expected, something like $150,000, but the number and class of tools have not been fully decided as yet, although it is expected that specifications will be ready at an early date.

The Pennsylvania Iron Works Company, Fiftieth street and Lancaster avenue, which has just sold its real estate holdings at that location to the Standard Roller Bearing Company, will remove to some location near Philadelphia and continue the manufacture of gas engines and other specialties as heretofore. At present the officers are not prepared to announce the probable location of the new plant.

The Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., which has been materially handicapped during the past few months owing to labor difficulties in the foundry department, is again in full operation and has no difficulty in obtaining plenty of men to operate its plant. Business conditions are now in good shape in both the foundry and machinery departments. Among some of the recent contracts may be mentioned large orders for open hearth furnace appliances for the Bethlehem Steel Company and for rolling mill machinery for the New York State Steel Company.

The American Bar Lock Company will build an addition, 30 x 90 ft., one story high, to its plant at Twenty-sixth street and Pennsylvania avenue. While this is to be used largely for warehouse purposes, a portion, it is understood, is also to be used for manufacturing.

The Stoever Foundry & Mfg. Company, Myerstown, Pa., advises us that there seems to be a marked disposition on the part of the large power plants to use shaking grates instead of stokers, and a shipment recently made by the company, consisting of 12 sets of its patent shaking grates for furnaces 12 ft. 6 in. wide by 12 ft. deep at the new Riverside station of the New York Edison Company, New York, would indicate that this style of grate was competing successfully with stokers in large installations. All departments of this company are very busy. Sales of pipe threading and cutting machines are increasing very satisfactorily, and shipments are being made to customers in many different parts of the country.

The Philadelphia Roll & Machine Company continues very busy. Over 1,000,000 lb. of charcoal iron have been melted by this concern during the month of August for castings, such as sand cast and chilled iron rolls, special rolling mill machinery, engine parts, etc. Orders for rolls have been very good and cover those of both sand and chilled types, up to 12 tons weight each. Orders for smaller rolls for brass, copper and rubber rolling as well as for special machinery parts have also been taken, and every department of the plant is being taxed to the utmost to make deliveries as promptly as possible.

The Hilles & Jones Company, Wilmington, Del., continues very busy and mentions as its principal difficulty the inability to make deliveries that are satisfactory to concerns in the market for punches and shears, plate bending rolls, plate planers and other lines of boiler and structural shop tools. A large number of orders have been booked, however, from scattering sources, principally from the different railroad companies. Within the last few days this company has doubled the equipment in its small tool department for the manufacture of punches and dies in order to meet the increase in this branch of its business.

The Tindel-Morris Company, Eddystone, Pa., advises us that there seems to be no let up in the demand for crank shaft lathes and cold saw machinery. The machine tool department has been particularly busy all summer, and a number of Tindel-Albrecht crank shaft lathes have been shipped for export, as well as to parties in this country. A shipment of five of these tools has just been made for foreign account, as has also a large double rotary slotting machine.

Barwood & Snider, Philadelphia, Pa., dealers in machine tools, have moved their office to the exhibition floor, section Z, Bourse Building, where they will have increased floor space to display their tools.

## Chicago Machinery Market.

CHICAGO, ILL., September 4, 1906.

Contracts for miscellaneous machinery and equipment, which in the aggregate will represent an expenditure of approximately $200,000, will be awarded by the Indiana Steel Company for installation in its new plant at Gary, Ind., within the next 10 days. All of the tools for the machine shop will be purchased, as well as the crane equipment for this unit and the foundry. Contracts for the gas producers for the open hearth plant, which will represent the largest single purchase of these machines ever made, will also be closed. Specifications for the crane equipment for the rail mill have not yet been prepared and will not be available until definite information is received regarding all of the machinery that is to be installed, so that the designing of the building can be proceeded with. Contracts for the steam lines, with the necessary valves and accessories, will also be closed shortly. The steam power for the unit now under way will be generated by 15 boilers of 400 hp. capacity each. As blast furnace gas is to be used largely for generating power throughout the plant, the steam producing capacity required is necessarily limited. Bids for the boilers are now being received, but the closing date has not yet been definitely fixed.

The Berlin Machine Company, Beloit, Wis., will erect a large woodworking plant at Hamilton, Ont., which will be operated by the Berlin Machine Works of Canada and which has been incorporated with a capital of $500,000. All of the woodworking tools and equipment manufactured at the Beloit plant will likewise be built in the Canadian shop, which will have exclusive control of the Dominion and export trade of the parent company. A site of 16½ acres in the confines of the city of Hamilton has been acquired, and electricity developed at Niagara Falls will be used entirely for motive power. For heating and all other purposes natural gas will be used, which can be secured at a cost of 10 cents per 1000 ft. Indicating the progressiveness of Canadian cities, it is asserted that the company will be practically free from taxation for a period of 15 years. Shipping facilities are provided by the Grand Trunk and the Toronto, Hamilton and Buffalo railroads. The machine shop will be 200 x 253 ft., part of which will be two stories high and the balance of the saw tooth construction, patterned after the plan of the company's new plant at Beloit. The foundry will be 72 x 200 ft., and the draft rooms, pattern shop and casting storage building will be 50 x 320 ft. The power house will be 40 x 84 ft., and the entire plant is laid out with a view of facilitating the making of extensions when required.

The Chicago & Western Indiana Railroad has had plans prepared for the erection of new shops in Chicago, and specifications for the equipment requirements will be shortly available. The plant will include a machine shop, 75 x 145 ft.; storehouse, 22 x 140 ft.; oilhouse, 30 x 30 ft.; office building, 33 x 96 ft., two stories, and a 51-stall engine house.

The Detroit Sanitary Supply Company will erect a new plant at Detroit, Mich., for the manufacture of plumbers' supplies and fittings, and contracts have already been awarded for four buildings by Donaldson & Meier, the architects of the plant. The main building will be two stories high and 58 x 135 ft., with a basement under all. In connection with the above, but separated from it by a thick fire wall, a two-story fireproof structure will be built, in which will be located toilet rooms, lockers and pattern vaults. A one-story building, 54 x 120 ft., will be used as a foundry. A power house, 34 x 88 ft., will complete the present equipment. The main building will be built of brick, cut stone and cement, while the toilet rooms, lockers and pattern vaults will be reinforced concrete. Contracts for the machinery will be awarded shortly.

The Hurst Automatic Switch Signal Company, Salt Lake City, Utah, is contemplating the erection of one or more factories for the manufacture of a patent automatic railroad switch signal controlled exclusively by the company and

known as the Hurst automatic switch. Recent preliminary tests of this system were approved for its great factor of safety and quick dispatch of trains. Just where factories will be located has not yet been definitely decided upon, although it is probable that one will be located in the West, another in the Central Northwest and one or two in the East.

The P. R. Mfg. Company, Detroit, will erect a new plant, at the cost of $20,000, to be devoted to the manufacture of electric bells. Contracts for considerable machinery will be awarded shortly, the engine, 50 hp. capacity, having already been purchased from the De La Vergne Company, New York, while the Dodge Mfg. Company, Mishawaka, Ind., will install the power transmission equipment.

E. M. Miller, 504 Fullerton Building, St. Louis, Mo., is designing a steel casting plant for the manufacture of small castings in which five large consumers of St. Louis are interested. Mr. Miller desires catalogues and descriptive matter of the machinery equipment and open hearth furnaces which are required in a plant of this kind.

J. Mercer Carter, Dallas, Texas, will shortly award contracts for the electric equipment of a southern interurban electric road, and desires quotations on boilers, engines and generators for a power station having an initial capacity of 1200 hp., and which can be increased to 3000 hp. in units of 500 to 1000 hp. In addition 6000 gross tons of 60-lb. tee rails, 60-ft. lengths; 1 mile of 91-lb. girder rails and 15 miles of 40 to 60 lb. tee rails are required. A steel bridge will also be built, having spans 300 and 340 ft. respectively, and a second-hand bridge will be purchased provided it is in good condition. Information regarding motor cars for interurban service is also desired.

The Aermotor Company, Twelfth and Rockwell streets, Chicago, Ill., will erect a one-story building, to be occupied by the shipping and galvanizing departments. It will be of mill construction, with exterior of brick, and will cover 180 x 320 ft. of ground. Galvanizing machinery is now being purchased.

As plans have not been completed, it is not known just what machinery will be required to equip the new plant of the Western Glucose Company, Chicago, Ill. We are officially informed that the plant is to be equipped with a large variety of machinery, and that there probably will be required for the power plant 3000 hp. of boilers, about 1500 hp. of engines, a number of pumps, electric and evaporating machinery. The company, which was recently incorporated with a capital stock of $2,400,000, expects to build a large plant at South Chicago, construction work to be started as soon as plans can be prepared. The company has opened an office in the Postal Telegraph Building, Chicago, which is in charge of P. L. Saenger, general superintendent, who was formerly general superintendent of the Warner Sugar Refinery Company's plant at Waukegan. It expects to begin the manufacture of glucose within a year, and its plant will have a daily capacity of about 10,000 bushels of grain.

## New England Machinery Market.

WORCESTER, MASS., September 4, 1906.

The date for the annual meeting of the National Machine Tool Builders' Association, to be held in New York in October, has not been fixed, but President E. M. Woodward and Secretary Paul E. Montanus will soon take up the matter. The meeting will be held on two days somewhere near the end of the month, and the suggestion is made that the Hotel Belmont be made the headquarters of the association. The social side of the meeting will be along the lines of the Atlantic City convention, for ladies will be present in large numbers, renewing friendships made in May. The influence of the ladies at these meetings cannot be exaggerated, for they bring an additional element of good fellowship into the deliberations, and it is well recognized that this side of association work is by no means the least important, the better and warmer the acquaintances resulting from the contact of competitors in a trade the greater the inclination to do away with the rivalries which sometimes exist between men in the same line of manufacturing.

The Vermont Construction Company, Burlington, Vt., has been organized under the laws of Vermont, with capital stock of $100,000. It will install new machinery for the structural iron business, and will also engage in all kinds of engineering and construction and do a general repair and foundry business. The company has taken the Lang & Goodhue plant at Burlington, and will build an addition to the buildings and will install new machinery. The incorporators are F. O. Sinclair, E. C. Mower, W. J. Van Patten, Lowell C. Grant, F. E. Burgess, C. W. Brownell, D. C. Hawley, F. E. Davis, E. E. Davis, C. D. Ordway and J. H. Holden.

The International Oil Engine Company has been organized by Walter P. Patch, head of the International Power Vehicle Company, Stamford, Conn., and the new company will take over the entire business of the old and also the real estate. However, the plant at Stamford will not be utilized for manufacturing the International kerosene engine, this end of the business having been transferred to Peabody, Mass., where it will be conducted by the Corwin Mfg. Company, as has already been stated in this column. The new company, with Mr. Hatch at its head, will have control of the sales end of the business.

The machine tools in the works of the Taunton Locomotive Mfg. Company, Taunton, Mass., which company liquidated its affairs something over a year ago, have been disposed of. Hill, Clark & Co., Boston, took the entire lot, and disposed of much of it to Peter H. Corr, Taunton. Mr. Corr states that he will be obliged to move the tools from the works within a short time. The works will be used by a manufacturer of textile goods.

The James Hunter Machine Company, Pittsfield, Mass., North Adams, Mass., manufacturer of textile machinery, is to build an addition to its erecting shop, to be 50 x 100 ft. and one story. The company recently added a new line of machinery to its product, necessitating an increase of manufacturing facilities, including machine shop and foundry, and the new erecting shop is a part of this general plan of enlargement.

The Warren Mfg. Company, Warren, R. I., textile manufacturer, is to erect a new mill, including a power plant.

The Commissioner of Public Works of the city of Providence, R. I., announces that the city will soon require a 10,000,000-gal. pumping engine for its water system.

The reorganized Taft-Peirce Company, Woonsocket, R. I., contractor for the manufacture of machines, tools and mechanical devices specialties, and for the redesigning of machines for economical manufacture, has made extensive changes in the works, improving them and increasing capacity. The company is one of the largest of its kind in the world, employing over 400 men, including 100 expert tool makers. An addition to the office, to receive the company's cost department, has recently been occupied and other changes made. The officers of the new company are: President, Louis V. Hubbard; vice-president and general manager, Frederick S. Blackhall; treasurer, Edwin E. Jackson, Jr.; secretary, Gordon Gordon, and assistant manager, Eugene E. Basquin.

It is reported, though the report is not confirmed, that the General Electric Company is to erect a large addition to its foundry at Lynn, Mass. The company is now erecting a factory building, 80 x 510 ft. and three stories, at the Lynn work.

The new building which the Potter & Johnson Machine Company, Pawtucket, R. I., is about to erect, will be used for the casting cleaning department. It will be 46 x 147 ft. and one story.

## Government Purchases.

WASHINGTON, D. C., September 4, 1906.

The Isthmian Canal Commission will receive bids until September 14, Circular No. 326, for machine shop equipment and a large quantity of other material.

The Bureau of Equipment, Navy Department, Washington, will receive bids until October 3 for a coal handling plant to be installed at Guantanamo, Cuba.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until September 25 for the following machine tools for the Portsmouth, Boston, Norfolk and Charleston navy yards: Schedule 122, woodworking machines, shafting, pulleys, &c.; schedule 123, boring and drilling machine, radial drill, engine lathes, bench lathe, turning lathe, saw filer, saw setter, tool grinder, knife grinder, bar straightener, band saw, planer and jointer, saw bench, planer, motor; schedule 124, radial drill, key seater, plug machine, &c.; schedule 125, planer, boring and turning mills and screw machines.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until September 18 for boilers, steam pumps and other supplies.

The following bids were opened August 28 for machinery for the navy yards:

Bidder 2, American Blower Company, New York; 11, Buffalo Forge Company, Buffalo, N. Y.; 13, Brown & Sharpe Mfg. Company, Providence, R. I.; 30, Crescent Machine Company, Leetonia, Ohio; 32, Chicago Pneumatic Tool Company, New York; 37, Drew Machinery Company, Manchester, N. H.; 38, D'Olier Engineering Company, Philadelphia, Pa.; 43, Frevert Machinery Company, New York; 45, Fox Machine Company, Grand Rapids, Mich.; 46, Frye, Phipps & Co., Boston, Mass.; 47, G. A. Fay & Egan Company, New York; 58, Hendey Machine Company, Torriagton, Conn.; 63, Handlan-Buck Mfg. Company, St. Louis, Mo.; 82, Manning, Maxwell & Moore, New York; 86, Montgomery & Co., New York; 91, Niles-Bement-Pond Company, New York; 96, J. Edw. Ogden Company, New York; 101, Oliver Machinery Company, Grand Rapids, Mich.; 103, S. M. Price Machinery Company, Norfolk, Va.; 106, Pratt & Whitney Company, Hartford, Conn.; 107, Prentiss Tool & Supply Company, New York; 110, Rochester Electric Motor

Company, Rochester, N. Y.; 112, Ricketts Engineering Company, Washington, D. C.; 116, John B. Roache, Brooklyn, N. Y.; 21, B. F. Sturtevant Company, Hyde Park, Mass.; 134, Sherman-Brown-Clements Company, New York; 149, Vandyck-Churchill Company, New York.

**Schedule No. 78.**

Class 11. One angle band saw—Bidder 30, $526.50; 101, $630.

Class 12. One pattern makers' lathe—Bidder 45, $925 and $975; 107, $995.

Class 13. One combination boring machine—Bidder 47, $574.

Class 14. One automatic saw grinder—Bidder 149, $150.

Class 15. One universal reamer and cutter grinder—Bidder 13, $228.96; 63, $300; 112, $580.

Class 16. One vertical automatic steam engine—Bidder 2, $226; 38, $250; 112, $260; 121, $250.

**Schedule No. 96.**

Class 72. One Groton disk grinding machine, with accessories—Bidder 43, $500.

**Schedule No. 97.**

Class 81. Hydraulic jacks—Bidder 46, $412; 63, $327.70; 86, $437; 103, $323; 116, $322; 134, $438.

**Schedule No. 50.**

Class 1. One 14-in. new model engine lathe—Bidder 58, $650; 106, $650; 112, $597.

**Schedule No. 51.**

Class 11. Two electrically driven centrifugal pumps—Bidder 96, $757.22; 110, $938.

Class 12. One high duty shaper—Bidder 82, $1410; 107, $1675.

Class 13. One combined horizontal punching and bending machine—Bidder 82, $3275; 91, $2929.35; 112, $3250.

Class 14. One patent pipe bending machine—Bidder 32, $120; 63, $132.50.

Class 15. One electrically driven blower for blacksmiths', plumbers' and ship fitters' fires—Bidder 110, $790; 121, $750.

**Schedule No. 52.**

Class 21. One 2500-lb. single frame steam hammer—Bidder 82, $1950; 91, $1791.50; 107, $2150.

Class 22. One steel pressure blower—Bidder 2, $50; 11, $37; 37, $55, $48.75 and $44.50; 38, $77; 63, $40.50; 112, $70; 121, $75.

Class 23. One toolroom lathe—Bidder 58, $485; 91, $361; 107, $495; 112, $382.

The following bids were received at the office of the Isthmian Canal Commission August 25, Circular No. 324A, for 10 earth spreaders:

Mann, McCann Company, Chicago, Ill., $51,900.

Oswald F. Jordan, Chicago, Ill., $54,500, delivered at Colon, or $47,000 at Harvey, Ill.

William J. Oliver Mfg. Company, Knoxville, Tenn., operated by hand winches, $33,000; operated by compressed air, $36,000; delivery, Colon.

The following bids were opened August 14 for a power and pumping system at Williston, N. D.:

Bidder 1, Camden Iron Works, Camden, N. J.; 2, Charles C. Moore & Co., San Francisco, Cal.; 3, Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa.; 4, D'Olier Engineering Company, Philadelphia, Pa.; 5, General Electric Company, Schenectady, N. Y.; 6, Joseph McWilliams & Co., Louisville, Ky.; 7, Gilbert, Wilkes & Co., Denver, Col.; 8, United Iron Works, Oakland, Cal.; 9, Hurley & Co., St. Paul, Minn.; 10, Platt Iron Works, Dayton, Ohio.

**Schedule A.**

Item 1. Four water tube boilers—Bidder 2, $30,400; 4, $26,014; 7, $23,000; 9, $32,435.

Item 2. Two additional boilers—Bidder 2, $2900; 4, $3515.50; 6, $2500; 7, $1850; 9, $4567.

Item 3. One forced draft outfit—Bidder 2, $11,000; 4, included in item 1; 7, $1244; 9, $1244.

Item 4. Two duplex feed pumps—Bidder 2, $6900; 4, $900; 7, $1153; 9, $2395.

Item 5. One closed feed water heater—Bidder 2, $4245; 4, $1850; 7, $1603; 9, $3208.

Total—Bidder 2, $55,545; 4, $32,279.50; 7, $28,850; 9, $43,848.

**Schedule B.**

Item 6. Two direct connected steam driven centrifugal pumping units—Bidder 1, $24,700; 2, $29,400; 4, $19,400; 8, $26,200; 9, $18,615; 10, $21,600.

Alternate to item 1 above, first unit—Bidder 1, $13,800; 2, $19,000; 4, $2,400; 6, $5800; 8, $15,000; 9, $9358; 10, $12,600.

Alternate to item 1 above, second unit—Bidder 1, $8500; 2, $8130; 4, $7000; 8, $14,000; 9, $7850; 10, $8500.

Total—Bidder 1, $22,300; 2, $27,130; 4, $19,400; 8, $29,000; 9, $17,208; 10, $21,000.

**Schedule C.**

Item 7. Two 300-kw. steam turbine sets—Bidder 2, $35,000; 3, $34,581.95; 4, $32,500; 5, $32,078.

Item 8. One motor driven centrifugal circulating pump—Bidder 2, $2830; 3, $1106.55; 4, $1585; 5, $1517.

Item 9. One engine driven exciter—Bidder 2, $2500; 3, $1229.47; 4, $1480; 5, $1195.

Item 10. One motor driven exciter—Bidder 2, $970; 3, $616.55; 4, $1450; 5, $725.

Item 11. One switchboard—Bidder 2, $2000; 3, $2093.12; 4, $2260; 5, $975.

Item 12. Three 25-kw. transformers—Bidder 2, $1000; 3, $712.25; 4, $575; 5, $738.

Item 13. Three 200-kw. transformers—Bidder 2, $7500; 3, $2892; 4, $4550; 5, $3184.

Item 14. Five-ton 26-ft. crane—Bidder 2 (45 ft.), $1450; 3, $782; 4, $960; 5, $830.

Total—Bidder 2, $53,250; 3, $44,013.99; 4, $45,360; 5, $41,242.

Per foot for additional span—Bidder 3, $5.50; 4, $12.50; 5, $12; $6, $12.

**Schedule D.**

Item 15. One motor driven pumping unit, 20 cu. ft.—Bidder 1, $4350; 2, $5550; 4, $4276; 8, $6000; 10, $4000.

Item 16. One motor driven pumping unit, 15 cu. ft.—Bidder 1, $3800; 2, $4400; 4, $3410; 8, $5000; 10, $3600.

Item 17. Three 50-kw. transformers—Bidder 1, $2125; 2, $1610; 4, $1507; 8, $1700; 10, $1375.

Total—Bidder 1, $10,275; 2, $11,510; 4, $9193; 8, $12,700; 10, $8975.

**Schedule E.**

Item 18. Two motor driven pumping units, 30 cu. ft.—Bidder 1, $1030; 2, $13,000; 4, $9676; 8, $15,500; 10, $10,300.

Item 19. Two additional pumping units, 30 cu. ft.—Bidder 1, $3350; 2, $9500; 4, $4138; 6, $3000; 8, $7500; 10, $4500.

Item 20. Three 150-kw. transformers—Bidder 1, $3990; 2, $3925; 4, $2860; 8, $5000; 10, $3150.

Total—Bidder 1, $17,640; 2, $26,425; 4, $16,674; 8, $28,000; 10, $22,450.

**Schedule H.**

Item 21. Including schedules A, B, C, D and E—Bidder 2, $171,500; 4, A, B and C, $95,180; 6, A, B, C, D, E and F, $108,900; 8, B, D and E, $58,000; 9, A and B, $79,671.

Item 22. Including schedules A, B, D and E—Bidder 2, $118,500; 4, D and E, $25,100.

Item 23. Including schedules A, B, C, D, E, F and G—Bidder 2, $201,000; 4, D, E and F, $29,100.

Item 24. Including schedules A, B, C, D, E and F—Bidder 4, $124,000.

Item 25. Including schedules B, D and E—Bidder 4, $43,950.

Item 26. Including schedules B, D, E and F—Bidder 4, $47,950.

Under bids opened August 34, Circular No. 323, for supplies for the Isthmian Canal Commission, the Pratt & Whitney Company, Hartford, Conn., has been awarded class 1, one turret lathe, $2550; class 2, one turret lathe, $1180.

Under bids opened June 26 for machinery for the navy yards the Niles-Bement-Pond Company, New York, has been awarded class 453, one engine lathe, $1248; class 480, one shaper, $983.

The Babcock & Wilcox Company, New York, has been awarded class 21, 12 marine boilers for United States steamship New York, $174,500; class 22, eight marine boilers for United States steamship Massachusetts, $104,040, bids for which were opened July 31.

The following awards have been made for supplies for the navy yards, bids for which were opened August 21:

Gamwell & Wheeler, Seattle, Wash., class 23, eight hydraulic jacks, $479.34.

General Electric Company, Schenectady, N. Y., class 41, one 20-hp. and one 15-hp. motor, $522.

William Wirt Clark & Son, Baltimore, Md., class 47, 9 hydraulic jacks, $405.

Henshaw, Buckley & Co., San Francisco, Cal., class 48, one portable pneumatic punch, $865.

Marine Mfg. & Supply Company, New York, class 49, six bilge pumps, $150.

Ajax Mfg. Company, Cleveland, Ohio, class 71, one 4-in. heading, upsetting and forging machine, $6690.

Manhattan Supply Company, New York, class 111, one valve reseating machine, $90.

Under bids opened August 16, circular No. 321, for supplies for the Isthmian Canal Commission, the following awards have been made:

A. D. Granger Company, New York, class 2, two water tube boilers, delivered at Colon, $3370.

Manning, Maxwell & Moore, New York, class 4, two centrifugal pumps, $3624.60.

## Trade Publications.

**Disk Fans.**—L. J. Wing Mfg. Company, 136 Liberty street, New York. Catalogue. Size 5¼ x 9 in.; pages 24. Gives the claims for superiority of the Wing disk fan, the uses for which it is adapted, and describes its construction in connection with a sectional view. A feature peculiar to this fan is reversability of the blades, by which the direction of the air may be reversed. Other illustrations show the fan driven by a small direct connected high speed engine, by a direct connected motor, and by belt. Another section of the catalogue describes the Wing high speed steam engine. The latter part of the catalogue deals with heating and cooling by the Wing fan system; the Wing acetylene generator; brazing and soldering irons; laundry irons, and ventilators.

**Cyanide Plants.**—Allis-Chalmers Company, Milwaukee, Wis. Bulletin No. 1413, superseding catalogue No. 14. Size 8 x 10½ in.; pages 56. Contains an extended account of cyanide plants and their equipment, explaining first the cyanidation process and varied methods of preparing the ore for treatment, &c. This forms part 1. Part 2 contains a description of the company's crushing machinery and equipment for the cyanide process.

**Automatic Steam Engines.**—Chas. W. Percy, 212 Summer street, Boston, Mass. Pamphlet. Deals with the Shipman automatic steam engine, which uses kerosene for fuel, and is claimed to be simple, efficient and economical and to give no dirt and no dust. A special reference is made to Shipman steam launches. The principal advantage of the system is that fuel is consumed only when useful work is being done. It puts out its own fire and relights it again when more power is required. The equipment will serve a special usefulness in small plants, where the services of a fireman and engineer may be dispensed with and the space ordinarily occupied by a complete boiler plant may be saved. Such plants are those required by farmers, printers, carpenters, machinists, blacksmiths and wheelwrights, isolated electric light plants, pumping plants, pleasure launches, &c.

**Oil Engines.**—De La Vergne Machine Company, East 138th street, New York. Catalogue. Size 6 x 9 in.; pages 82. Describes the mode of operation of the "Hornsby-Akroyd" oil engine and gives illustrations and short descriptions of the more recent installations of these engines, there being over 14,000 of them in operation. The popularity of these engines is explained by the extremely low cost of power, which is claimed to be from ¼ to ½ cent per brake horse power hour.

**Rope Fiber Machinery.**—Geo. L. Squier Mfg. Company, Buffalo, N. Y. Four-page leaflet, in Spanish, describes the Buffalo-Pons fiber machinery, adapted for cleaning fiber of all classes. In addition to cleaning machines, this company also makes a fiber baling press, which so bales the fiber after it comes from the drying machines that it goes to the cordage and rope manufacturers in condition to be worked up into continuous lengths rather than short lengths.

**Planers and Shapers.**—The Ohio Machine Tool Company, Kenton, Ohio. Loose leaves for catalogue insertion. Each gives a view and specifications of the following machines: 30, 33 and 36 in. metal working planers; 24 and 27 in. metal working planers; 18 and 22 in. single or back geared crank shapers; 16-in. crank shapers, single and back geared, and 21 and 28 in. triple geared shapers.

**Refrigerating Machinery.**—Automatic Refrigerating Company, Hartford, Conn. Pamphlet. Subject, "Automatic Refrigeration." Contains a general discourse on cold and its production, followed by a treatment of the subjects, "Mechanical Refrigeration" and "Automatic Refrigeration," giving in particular a description of the automatic system installed by this company. Illustrations show general views of equipments and the arrangement of a complete automatic system. A 5-hp. plant has a cooling capacity equivalent to 5200 lb. of ice per 24 hours; a 3-hp. plant, 2800 lb. of ice per day, and a 2-hp. plant 1500 lb. of ice per 24 hours. Another view shows a 3-hp. plant with the cold storage compartment.

**Crushers.**—Sturtevant Mill Company, Harrison Square, Boston, Mass. Folder. Illustrates coarse breakers, steel rock breakers, roll jaw fine crushers and crushing rolls. In addition to the numerous large illustrations, brief descriptions are given of the special features.

**Gas Exhausters, Blowers and Pumps.**—P. H. & F. M. Roots Company, Connersville, Ind. Three catalogues. Catalogue 32 refers to Roots' positive pressure blowers. It is interesting to know that 46 years ago the first Roots' blower was designed and constructed. This catalogue shows the present highly developed form of this blower. Among the illustrations are shown a large size smelting blower with special blast gates, and the types of blowers usually required for foundry work, one of them being an arrangement for automatically maintaining a uniform pressure. Bulletin 33 deals with the special subject of smelting blowers. Catalogue 34 is devoted to rotary gas exhausters, gas valves and by-pass valves, automatic gas governors and pipe fittings, and contains considerable useful information.

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## New Publications.

**The San Francisco Earthquake and Fire.** By A. L. A. Himmelwright. Pages, 270, 9½ x 11 in. Illustrations, 172. Published by the Roebling Construction Company, New York. Price $5.

Mr. Himmelwright went to San Francisco in the interest of the Roebling Construction Company immediately after the disaster and devoted nearly three weeks to a detailed inspection of the fireproof buildings. In each case the exterior was minutely examined, and then each story was taken in turn, the halls were traversed, and extended notes were made on the spot of all features of interest. The results are presented in this book. In an introductory word the author says that, as at Baltimore two years ago, it was demonstrated that buildings could be so constructed as to be absolutely indestructible by fire. This has again been more conclusively proved in San Francisco, and the additional fact established that such buildings can also be designed to withstand earthquake.

In the earlier pages of the book a general account is given of the California earthquake and fire, and maps are presented, in which the burned district is outlined and its extent compared with that in Baltimore. The nonfireproof buildings are first taken up, but only brief treatment is necessary, as the investigation showed a a general failure of the walls of such buildings. The fireproof buildings, those whose walls, floors, roofs and partitions are of incombustible material, and in which the floor loads are supported by protected steel framing, stand out prominently in the midst of the ruin. In discussing the effects of the fire on these structures, Mr. Himmelwright presents 170 half-tone views, most of them full page engravings, illustrating with much detail the extent of the damage done by fire and earthquake. In connection with each view, its particular feature is pointed out, and details are given of fire and earthquake effects, after the construction has been described fully.

The author concludes and gives abundant evidence to sustain the view that the best modern practice in the design of foundations, exterior walls and steel skeleton has proved satisfactory, though a few details can be improved. The San Francisco fire, he considers, has narrowed down the problem of making these structures fireproof to two principal features—first, the protection of the openings in the exterior walls, and, second, the protection of columns in buildings which are to become receptacles of large quantities of combustible contents. He calls attention to the glaring omission of fireproof barriers for exterior openings in prominent San Francisco buildings, and says that this was the direct and sole cause of the damage and destruction to the interiors of nearly all the fireproof buildings. Had suitable devices been provided in the window and door openings it is stated that the interiors of these buildings would have been wholly preserved, so that the necessary repairs would have been limited to the restoration of the spalling and other exterior damage. The neglect noted was not for lack of such material in the market. Metal or metal covered frame and sash, wire glass glazing and inside and outside metal shutters can now be had in a variety of designs, and for the door openings metal and metal covered frames and doors are available.

Referring to the second of the two main points which he emphasizes, Mr. Himmelwright says that for column protection concrete, well anchored with interior anchors attached to the columns at intervals of 12 to 18 in., showed the best results for stores, lofts, warehouses and similar buildings. For office buildings, hotels and institutional buildings a protection 2 in. thick of this material is sufficient. A double layer of wire lath and plaster with an air space between, or 4-in. hollow tile blocks laid in cement mortar, with the space between the blocks and the column filled solidly with concrete or mortar, will also fulfill the requirements. In all cases it is essential that the protection be securely anchored to the column, otherwise the expansion of the column and abnormal stresses and strains are apt to crack the protection and cause it to fall away. Other lessons of the fire are summarized as follows: The use of refractory materials for façades; concrete floor construction of recognized strength and fire resistance; reinforced concrete for partitions; the provision of a separate inclosure for vertical pipes independent of the column protection; metal treads for stairways; provision for the expansion of steel lintels and mullions; filling with incombustible material between all fireproof floor arches and the under side of the finished floor; sufficiently heavy supports and the avoidance of copper wire in metal lath and plaster ceiling construction; the provision of vaults of suitable design of reinforced concrete or brick, the small steel vaults and portable fireproof safes having proved ineffective.

Among the lessons taught by the earthquake the following are given: The avoidance of locations in close proximity to geological fault lines; the building of foundations sufficiently strong to enable the entire base of the building to move as a unit; the adoption of the steel skeleton frame method for the superstructure, using cast iron columns and reinforced concrete columns, girders and beam with caution, and in comparatively low buildings only; the use of the best materials and workmanship for wall construction; the use of steel for high chimneys and towers; the thorough anchoring of roofing tiles. On the general subject of the use of reinforced concrete the writer comments as follows:

> It was conclusively shown in a number of instances in the recent conflagration that reinforced concrete girders and beams under identical conditions possessed much less fire resistance than steel members of the same carrying capacity. Reinforced concrete columns and girders are much more bulky than similar members of equal capacity in steel. In order to adapt concrete buildings to withstand earthquakes it would be necessary to provide an elaborate system of ties and braces, which would not only involve original and untested designs, but would also obstruct the head room with unsightly structural members.
>
> The success and safety of reinforced concrete depends wholly upon the uniformly good quality of the cement. A single barrel of damaged or poor quality cement going into the concrete of a column or a girder would create a weak spot and might at any time cause a fatal and expensive accident. Even under the most favorable conditions concrete girders and beams vary from 10 to 50 per cent. in actual strength when tested to destruction. This fact shows that it is not a uniform or homogeneous material like steel, and consequently it is less reliable.
>
> In view of the foregoing considerations, reinforced concrete is not as well adapted as steel for columns, girders and beams, and should not be used for this purpose where steel is available. The steel skeleton frame, consisting of columns, girders and beams, has thoroughly demonstrated its ability to successfully resist earthquake movements, and absolute dependence can be placed on it to retain its strength and integrity when subjected to the crucial test. It should be adopted in all cases for the better class of buildings, and particularly for hotels, offices, schools, institutions and similar buildings that are to be occupied by large numbers of human beings.
>
> Reinforced concrete has a useful and definite field in fireproof building construction. The facility with which reinforced concrete can be anchored to the steel members renders it particularly well adapted for curtain wall construction in steel skeleton frame buildings. Concrete also possesses better fire resistance than any of the ornamental stones, such as granite, sandstone, &c. Being a monolith, it can be built much thinner than materials consisting of assembled pieces, which would make it more economical. The complex stresses and strains that obtain in horizontal beam and slab construction, and the tendency of the dead load to deflect and warp, are wholly eliminated in vertical wall construction. The reinforcing metal can also generally be located in the mid-section, where it is much less exposed to fire.

The successful manner in which the tall buildings withstood the effects of the earthquake is particularly emphasized in Mr. Himmelwright's discussion. He considers that the San Francisco disaster has furnished conclusive proof that the principles involved in their construction are correct. Even the tallest buildings remained practically plumb. The high buildings of Chicago, which have never been subjected to earthquake shocks, show in many cases greater variations from the plumb than were generally noted in San Francisco. Referring to the degree of heat to which the interiors of the fireproof buildings were subjected, it is stated that the average maximum temperatures in office and hotel buildings, as determined by the fusing of metals and other phenomena, ranged from 1500 to 1900 degrees F. These maximum temperatures were probably not maintained for more than a few minutes.

The report deserves and will have a wide reading, since it is a unique and highly valuable contribution to the literature of modern tall building construction.

# HARDWARE

THERE has been within the past few years a manifest improvement in the printed matter issued by manufacturers for circulation among the retail trade. This improvement is seen not only in the more attractive manner in which their goods are described and the various qualities and advantages of the articles enumerated, but also in intelligent efforts to furnish retail merchants with information and suggestions in regard to the handling of the goods and desirable methods to be pursued in marketing them. The manufacturer's interest in his retail distributers is also evidenced in the furnishing to them of leaflets, or even booklets, for circulation among the retailer's customers. Many manufacturers, too, hold themselves in readiness to supply advertising cuts for use in local papers or circulars, and an increasing number are making suggestions in regard to effective advertising methods, in some cases furnishing electrotypes of complete advertisements which can be used by the merchants. All this is progress in the right direction. Such efforts should be appreciated by the trade, and the valuable assistance thus given should be welcomed and utilized to the fullest extent. Indeed, the retail merchants would do well to inform themselves on these matters and communicate with manufacturers whose goods they handle and find out in what way they are endeavoring to cooperate with the retail trade in the marketing of their products. Any inquiries addressed to the manufacturers along these lines would assuredly call out most courteous and probably in most cases very helpful responses. Many a retail merchant would be surprised if he realized the high value which is put upon his trade and the estimation in which he is held by the manufacturer as one of his many distributers, even though the goods may have been purchased indirectly from a jobbing house.

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In the following pages reference is made to a somewhat related matter, as a description is given of the methods adopted by a well-known manufacturer, with a view to increasing the sale of his goods through both the wholesale and the retail houses. To accomplish this, prizes of substantial value are offered to the traveling salesmen of the wholesale houses, the allotment of the prizes to be determined by the amount of goods sold, and to the retail merchants for effectiveness and enterprise in the display and selling of the goods. The particulars of this unique effort to command special attention to a line of goods will doubtless be scrutinized carefully by the trade, and the results of the experiment awaited with interest. The announcement will certainly attract attention and bring the important line of goods to which it relates very prominently before the trade. In addition to working advantageously in producing increased sale for the special products concerned, it should, however, tend to bring home to the merchants the fundamental principle that the pushing of a given line, including the proper display of the wares in the store, will result in enlarged sales. The effect, indeed, of considering what is to be done along these lines in any one case should have a stimulating influence upon the general conduct of the store. So far certainly as retail merchants endeavor to be among the prizewinners in the contest in question, will there be an awakening of enterprise and energy which may bear fruits in departments of the business very remote from those in which this particular manufacturer is immediately concerned. Who knows but it may set some merchants heretofore lacking in aggressiveness and initiative to think whether it would not be good business to adopt different methods and to push the entire business with a new spirit?

## Condition of Trade.

With the opening of fall the marked character of the trade during the summer months comes out distinctly in the retrospect and the strength of the market stands out notably in contrast with the usual summers in which prices relax and give way to a greater or lesser extent. This year, however, it has been entirely different, and the manner in which values have been sustained, and have even appreciated, makes the past months remarkable. These conditions are emphasized by the continuance of strength in prevailing prices and the steadiness and volume of the current business. There is on the part of manufacturers in the Hardware and allied fields a disposition to be conservative in the matter of making advances, recalling the ill effects of the establishment of high prices which must in various ways be disadvantageous, and from which there is sure to be sooner or later a reaction. Advances are accordingly slowly and almost reluctantly made, but the increased cost of producing goods renders them in many cases imperative. Most of the advances are, however, of moderate amount, sometimes consisting in the withdrawal of exceptional figures given under special circumstances, perhaps for the purpose of inducing orders when it was less easy than at present to sell goods. There is on practically all sides a growing difficulty in getting orders executed at all promptly, and many of the manufacturers are becoming unpleasantly far behind in their deliveries. The demand which prevails comes from practically all sections of the country, as prosperity is found on every hand. The demand is so large and insistent and so obviously crowding the capacity of the manufacturers that merchants will be wise to see to it that without delay they get goods for their fall business. While there is as much need as ever for careful buying, in the present condition of things the securing of the goods is a matter of prime importance. There is little doubt that before long there is to be a greater scarcity than exists at present.

### Chicago.

With the advent of September a marked improvement has been recorded in the demand for Stoves and heating accessories, and manufacturers who made up large stocks earlier in the year, which in many instances exceeded those of last year, are looking forward to their entire disposal, notwithstanding the limited purchases made by retailers during the early summer months. The stocks in the hands of the jobbing trade, particularly in the Northwest, while the heaviest on record, are beginning to move freely for October and November shipment. Stocks carried over by retailers owing to the mild winter, while considerable, have to no appreciable extent curtailed purchases thus far, and the buying although somewhat belated gives promise of comparing favorably with that of last year. High-grade heaters are also demanded more generally, indicating that consumers have been educated to quality, probably as a result of dire experiences with Stoves of extremely low cost and corresponding quality. Prices, however, are generally maintained on last year's basis, thus netting the makers a smaller profit than heretofore, on account of the increased cost of raw materials. Goods for harvesting the corn crop are now

going forward in large volumes from jobbers' stocks, and the average purchases of the merchants show a big increase over last year, when the record crop depleted stocks when the season was at its hight. Manufacturers increased their productions this year very materially and sufficient goods are now on hand to meet all requirements. Consumers of both Black and Galvanized Sheets are experiencing increased difficulties in securing shipments for their concurrent needs, and the production of Stamped and Enameled Ware and many Hardware Specialties is being curtailed in consequence. Refrigerator manufacturers, who are beginning to make up stocks for next season, report that the shortage of Galvanized Sheets is acute, and their operations are hampered accordingly. While prices have not yet been considered, it is probable that a higher level will prevail on all lines of Wooden Refrigerators, on account of the high cost of all materials, desirable grades of wood being scarce and high in price. Other materials entering into their manufacture have likewise advanced during the year. Enameled Ware, owing to keen competition, occasioned by the large number of new concerns that have entered the field, continues to be sold on a comparatively low basis, although a few makers of established brands are maintaining their schedule, notwithstanding the increased competition.

## Philadelphia.

SUPPLEE HARDWARE COMPANY.—Since our last letter there has been no change to report in the general volume of business. Specifications for fall requirements are generous, reaching us from all sections, and, with one or two exceptions, our representatives are unanimous in their predictions of an excellent trade for the balance of the year.

We have heard some talk of an advance in Cut Nails, but without any evidence up to date of its materializing. The demand for Wire Nails has been very large, with indications of increasing. Prices remain without change.

To those who have been doing "double time" in office and storeroom, the drawing to a close of summer vacations will be looked upon with thankfulness and relief. Ordinarily it has been possible for one to accomplish what two have generally done, but this season there was apparently no let up in the volume of trade from one month to another, and of course where one's duties were doubled it took great hustling to keep up from day to day. What we generally term as the "Summer Solstice" (looked upon as a season when business is at somewhat of a standstill) might almost have been the early spring months so far as trade was concerned. We are looking for a continuance of the general prosperity through 1907, and see nothing to indicate any cause for worriment. Collections are normal.

## Baltimore.

CARLIN & FULTON.—The fall season has opened with an excellent demand for goods in all lines of trade, and the hotel registers show the arrival in our city of a great number of out of town buyers, more particularly from the South. Such goods as require personal inspection in their selection as to style and quality, like dry goods and notions, attract more buyers to the market than is done by Hardware, which is sold more generally by catalogue and by the traveling salesman; still it is always an advantage for the buyer to visit a market, get acquainted with the houses with whom he has been dealing, and learn by personal contact much which he cannot always acquire at his own home.

The activity of trade all over the country is stimulating the market to such a degree that we find moderate advances occurring in many lines almost generally and rarely a decline is noted. Probably were the manufacturers to take advantage of the situation they could make some radical changes, which, however, they seem unwilling to do, and what advances have occurred seem to be based upon a legitimate demand for the goods. Speculation seems to have had so far little cause for present market prices. What may occur later we cannot say.

## Portland, Oregon.

FAILING, HAINES & MCCALMAN.—This has been to date the most prosperous year the Pacific Northwest has ever had. Crops have been good, and some are high in price, especially hops. The salmon pack has been fair, and all the natural conditions are favorable to a continuation of great prosperity. In July Portland again led the country in the increase in value of building permits over 1905 with a percentage of 266. With the building of two railroads down the north bank of the Columbia to Portland and branch and independent lines into the undeveloped parts of Oregon a singularly rich country will be opened to the Portland jobber as never before. We are certainly on the verge of an unexampled era of prosperity in this country, and our only worry is to get enough goods to supply the demand. In addition to the great increase in trade in our immediate territory, the jobbing trade of this city has been reaching out for new markets in the Hawaiian Islands and Alaska, where a good business will undoubtedly be found. As has been said before, we are on the verge of the greatest increase in prosperity in the history of the Oregon country.

## Cleveland.

THE W. BINGHAM COMPANY.—Trade and traffic in all lines of Hardware, Mining, Milling and Manufacturing supplies, and general Hardware and House Trimmings, is exceedingly good at the present time, and no doubt will continue throughout the entire season. During the past six or eight months we have felt that we did right in saying to the trade to stock up liberally through their jobbers on general lines of goods, as there were indications of scarcity and there would probably be some changes in prices. Now isn't it a fact that merchants are receiving notices from manufacturers and jobbers of scarcity and advances in prices, also withdrawing prices on certain lines of goods because they do not know just how they can be supplied in future. We have before us a letter from a prominent manufacturer, from which we quote as follows: "We have heretofore taken a great deal of pride in our ability to fill orders promptly, but we must confess with the unprecedented, constant and increasing demand for goods, we become considerably embarrassed at times lest we may be unable to satisfy our customer."

We are also in receipt this morning of a letter from another manufacturer, who says: "Owing to the heavy advance in the price of raw material and the scarcity and increasing cost of labor, we are obliged to withdraw all prices on our product. New prices will be quoted on application."

Another manufacturer says: "Referring to your order of May 8, we regret to advise you that owing to the large quantity of orders we have on hand it will be impossible to ship your order before October. However, we will keep this order before us and will try and improve the time."

We take no pride in saying "we told you so," but from the way matters are going and have been steadily going on since the first of the year we felt warranted in notifying our customers of many probable advances, also scarcity in some lines of goods.

Large contracts for Pig Iron are being placed at $18.50, and when you stop and think of the present price of Hardware made of cast iron predicated on pig iron at about $14 to $15 a ton, you can see what an effect this would have on the price of Hardware.

Cleveland jobbers, however, have anticipated a scarcity and advances on many lines of goods, and are ready to supply their customers promptly, and are not disposed to take advantage of the existing circumstances to advance the prices. During the next 60 to 90 days there will be an immense tonnage of goods going forward by water from Cleveland to the north and northwest sections, and it is no easy matter to get freight commodities by water at the present time, although the Great Lakes seem to be literally covered with freighters coming and going. The movement of coal up and ore down the lakes is in itself very large, and add to it the package freight going up and grain coming down and the com-

bination makes a freight traffic never before equalled.

Peace, prosperity and contentment seem to be in all our borders, and the question comes to us: Do our people throughout the land appreciate the present prosperous times, and are they willing to stand pat and allow present conditions to continue, or have we more prosperity than we can stand, and do we want a change? It is up to the people to have what they want.

"You pay your money and take your choice." In other words, when you cast your vote you do so for or against your own interests, as time will indicate.

### St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY. — Trade throughout this section continues unusually brisk. In the South, in certain spots, there has been too much rain. The boll weevil is heard from in eastern Texas and western Louisiana. In spots in Missouri and other corn growing States there is some complaint of drought. The majority of reports, however, are of good conditions, fine prospects and active business.

One of the best barometers of prevailing conditions is the number and size of mail orders received direct from customers. Mail orders in August were not only numerous, but many of them covered a considerable assortment.

This increase in mail orders indicates a very active business prevailing with the retail dealer, because modern conditions are somewhat against the mail order business. The number of salesmen has increased. Every hamlet is more than thoroughly worked. Salesmen have long distance telephones in their homes. Dealers knowing they are at home at the end of the week ring them up and orders that formerly came to houses direct from their customers are now telephoned to their salesmen and come from them. This is probably more satisfactory to all concerned. The salesman knows just what his customer wants and he enters the proper price.

When we consider the territory covered by long distance telephones we are rather of the opinion that we jobbers have been somewhat unconscious of changes in methods of selling goods that are taking place even in our own houses. Then in the immediate vicinity of the large cities merchants who formerly sent mail orders are using telephones. All jobbers doubtless have found it necessary to add to the number of their telephones, in order to take proper care of an increasing business of this nature.

Then in those States such as Indiana and Ohio, where the electric cars are giving such wonderful interurban service, salesmen cover the ground very much more rapidly than in former years. The small towns are much more thoroughly worked.

In the great South and Southwest, where towns are scattered and the population thin, these "improvements" have not yet taken place. Salesmen can often "work" only one town a day. Not being able to travel so fast they show samples and take longer orders. A salesman trained in New Mexico would be somewhat at a loss selling goods in Ohio, while the Indiana interurban lightning change artist would surely feel out of place in Arizona.

An interesting development in the trade is the largely increasing demand for handled Axes. Up to date jobbers have extensive plants for handling their Axes. Their customers have the choice of buying any Axe they carry fitted with any kind or grade of handle. Retail merchants visiting jobbers will be interested in the labor-saving machinery for handling Axes. They will be surprised at the rapidity with which this work is done, and the large quantity of Axes handled and shipped daily.

The large number of merchants who have visited this city the past few weeks has been a feature of the trade. These merchants do not consider the convenience of the jobbers when making their calls, and when 40 or 50 merchants expect to be waited upon promptly at one time the pressure upon the jobber's resources in the way of house salesmen is somewhat severe.

It is not, however, an unmixed evil because it gives some of our sales managers and heads of departments who have rather gained the idea that their years of service have put them on the retired list an opportunity of brushing up their former abilities as salesmen. But some of their methods in selling remind me of an occasion on which I went into the store of a haberdasher with a friend. The gentleman who waited on him did not seem to be posted on the stock. Finally, however, he got what was wanted. As we walked out this friend turned to me and said: "That man who waited on me was either the proprietor or a darn poor clerk."

Just as a matter of interest we looked up our records to see how many of our salesmen are married. We were surprised to find about 90 per cent. of the salesmen representing this house are Benedicts. We therefore issued a general letter to the wives of our salesmen appointing each one salesmanager of her own husband for the month of August. We offered these ladies a small prize for certain results attained by their husbands. We are to-day sending out a circular letter announcing that August was the largest month in our history. Therefore it is not only appropriate, but fitting that we have dedicated August—our largest and best month—to the wives of our salesmen.

So, again, even in the prosaic Hardware business, we have an illustration of the saying:

"The hand that rocks the cradle rules the world."

### Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—Business continues to break all records in this section. The crop prospects are very fine, and it is practically settled that there will be large crops of all kinds throughout the South this year. All the salesmen are on the road, and fall trade is getting heavier every day. Business for August was from 25 to 50 per cent. ahead of last year with Southern jobbers, and September will probably show even greater increase. Of course it must be borne in mind that last year the South was suffering from yellow fever, and the quarantine regulations almost suspended business for some time, but even making allowances for all that there has been a big and healthy increase in trade.

The market conditions are fine; there have been a great many advances in a number of lines, and prices are being well maintained. Collections are not quite as good as we should like to see them. Money matters are a little bit close with both jobbers and retailers. It is rather hard on the Southern jobber at this season of the year, for the reason that a large part of their sales throughout the summer are sold on fall dating, and the money is not due until November or December.

September 1 was a big day for this city, as it marked the birth of "Greater Nashville." At the last meeting of the Legislature the city was authorized to extend its corporate limits, which had not been done for many years. This went into effect on September 1, and the city now covers more than twice its former area, and its population has increased so that it is estimated to-day at 170,000. This makes Nashville rank as the second largest city in the South, and probably growing faster and developing more rapidly than any other Southern city.

### Louisville.

BELKNAP HARDWARE & MFG. COMPANY.—Business is still manifesting extreme activity. The telegraph companies are getting the benefit of the anxiety to secure goods which were contracted and ordered months ago. We doubt if the wires were ever used more freely in the buying departments of the large houses.

The weather has been propitious for harvests so far, and September 1 comes in without any untoward indications in the whole Southern country. No epidemic, large crops, good prices, ample employment for everybody who is willing and can use either head or hands, all of these things make it extremely difficult to tinker up a new platform which shall make things better than heretofore.

Government ownership of railroads, regulation of trusts and prices and various catch phrases of that kind sound well from the platform, but we doubt if they will take any great hold on the people. They are not feeling any baneful influence which needs to be corrected. The time may come when we shall, and then there will

be no lack of argumentation if not argument. We can at least promise ourselves that there can be some oratory worth listening to between now and the next national campaign, and with men of the stamp of Joseph Folk of Missouri on the stump there should be most flattering results effected in the States, and moreover in the cities wherein he has set an example of actual genuine reform. If we can really get up good grounds for the optimism of this most successful reformer operative all over the country we shall have something worth while.

### Omaha.

LEE-GLASS-ANDREESEN HARDWARE COMPANY.—The general business situation remains fully as favorable as it was at the time of our last report. All kinds of merchandise are going into consumption rapidly. Orders from the country cover well assorted lines of goods, showing that retailers are enjoying a steady and continuous demand. In practically every section of the country numerous evidences are apparent everywhere in the shape of new buildings, both for commercial and residential purposes.

With a continuance of favorable weather the yield of the corn belt will be something phenomenal, and the existing values should bring a large amount of money into circulation. The prospect for extraordinary business activity and prosperity for the remainder of this year is assured, and all calculations are unreservedly made on that basis. A very confident feeling pervades all commercial classes, and to this the great crops directly contribute.

### St. Paul.

FARWELL, OZMUN, KIRK & CO.—September opens under very favorable conditions. The harvest has progressed satisfactorily, and except in parts of the territory farthest north it is about finished and stacking and threshing is in full swing. The weather on the whole has been good, and the crop is generally being saved in good condition. A few more weeks of favorable weather will put the situatiton into fine shape. There have been very few destructive storms of hail, wind or rain, and we therefore find but few sections that will need to be "carried over" to a large extent.

The crops throughout the Northwest will be fully up to average and something more, and we may reasonably expect a good fall and spring trade. In comparing this fall's business with that of last fall, as the months go by, the fact must not be lost sight of that last fall's trade was very heavy in Hardware and probably also in other lines. This year's business thus far has been considerably ahead of that of any preceding year, but the same ratio of increase for the balance of the year cannot be maintained. However, it is now assured that business will be good and that 1906 will rank among the years having a satisfactory balance sheet.

It is evidently the time now for the retail merchant to see that his stock is in best condition possible and that he is up for business and at it. It is pre-eminently the time for him to watch closely for his catalogue house customer, for when cash abounds this danger greatly multiplies and the catalogue house fattens. Close attention and thorough work will accomplish great results in securing this business. Jobbers are trying hard to give all the help possible and are accomplishing much, and by all working together can do still more. Better work is being done than ever before, and we are sure that the results are showing it.

## NOTES ON PRICES.

**Wire Nails.**—The anticipated condition of excess in demand over supply has arrived, and the booking of orders by mills is beyond their capacity. Preparations for supplying Steel have not advanced as rapidly as the demand for the finished product, so that lack of this material is affecting the output of Nails. The difficulty of obtaining sufficient workmen to operate the mills, and the shortage of cars, are interfering with production and deliveries. Some of the mills are running double turn and are shipping directly from the machines, in the absence of complete assortments to draw from. Under existing conditions it appears that it will be impossible that all orders can be filled complete. The situation is calculated to insure a general maintenance of prices, but an advance in the near future by the largest interest is not considered probable, as most of the heavy orders have been placed. According to reports some of the smaller mills are shading prices slightly. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads to jobbers | $1.85 |
| Carload lots to retail merchants | 1.90 |

*New York.*—During the last week in August the demand for small lots from store was moderate. Some delay is experienced by jobbers in receiving prompt shipments on account of a shortage in cars. As a result of a discontinuance of loaning money by trust companies to builders in the boroughs of Manhattan, Bronx and Brooklyn, on account of over building in these sections, it is anticipated that the local demand will be reduced to some extent. Quotations for small lots from store are on the basis of $2.10 per keg.

*Chicago*—The car shortage, which is growing more pronounced daily on account of the heavy crop movement in the Northwest, has now been added to the other conditions that are being experienced by the mills in endeavoring to make shipments to consumers. No relief from the steel shortage, which is curtailing production at practically all of the mills, is promised within the near future, and the indications are that before the present month has advanced very far the trade generally will be suffering not only from a shortage of Wire Nails, but Wire products generally. The bookings of new orders during the month of August by the leading interest with one exception surpassed all previous monthly records. Notwithstanding the pressure for deliveries some of the smaller manufacturers, according to reports, are continuing to make concessions of $1 a ton. While the trade generally has been anticipating an advance it is probable that it will now be withheld through the fall season, inasmuch as the heavy buying movement has been passed. Quotations are firm but unchanged as follows: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh*—The amount of new business in Wire Nails entered by the mills in August broke all previous records for that month, and September promises to do equally as well or even better. Specifications on contracts are coming in so heavily that the mills are getting further behind in deliveries, and it looks now as though in a short time the mills would have to adopt a plan of prorating orders, as it seems certain the supply of Nails will not be equal to the demand. It is very evident that owing to the shortage in the supply of Steel the Wire Nail mills will not be able to get out a full output in September and October, and this will aggravate the situation regarding deliveries. Stocks of Wire Nails held by jobbers are light, Nails moving out to consumers as fast as they are turned out by the mills. Prices are generally firm, but are shaded very slightly by several of the smaller mills. We quote: Wire Nails, $1.85 in carloads to the large jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

**Cut Nails.**—The volume of demand in the way of contract orders has been fair, but is expected to increase during this month. Concessions on official prices of 5 cents per keg, f.o.b. Pittsburgh, are understood to be more or less general. Official quotations are as follows: $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

*New York.*—The demand is about in the usual proportion to that for Wire Nails. Quotations for small lots from store are on the basis of $2 per keg.

*Chicago.*—Contracts for fall delivery of Cut Nails are in fair volume and distributers anticipate an increased movement in the next few weeks. Specifications on contracts are being made freely. Quotations prevail as follows: Steel Cut Nails, in car lots, $1.90 to $1.95; less than car lots, $2; Iron Cut Nails, $2 to $2.05, in car lots; less than car lots, $2.10.

*Pittsburgh.*—The demand for Cut Nails in August for fall delivery was fairly heavy, but it is expected that orders in September will show a large increase over last month. Most of the Cut Nail mills are having trouble in getting prompt deliveries of raw material, and this is restricting output to some extent. Specifications on contracts are coming in quite freely. We quote Cut Nails at $1.75, base, f.o.b. Pittsburgh, for carload lots and $1.80 in less than carload lots. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

**Barb Wire.**—Specifications on contract orders are heavy, and the amount of tonnage taken by the mills during August was large. Mills are now experiencing some difficulty in making prompt shipments. Official prices are generally maintained, but occasional reports of shading prices by the smaller mills is heard. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.00 | $2.30 |
| Retailers, carload lots | 2.05 | 2.35 |
| Retailers, less than carload lots | 2.15 | 2.45 |

*Chicago.*—Heavy specifications are now coming forward on the contracts made during the past month and the general demands made by distributers for prompt deliveries are indicative of the small stocks that are on hand. The following quotations prevail: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50; Retailers, less than car lots, Painted, $2.30; Galvanized, $2.60; Staples, Bright, in car lots to jobbers $2.10; Galvanized, $2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—The tonnage entered by the mills in August was away ahead of all previous records for that month, and promises to be equally as large or even heavier in September. The mills are already behind in deliveries, and will probably get further behind on account of the shortage in supply of Steel. The market is generally firm, but occasionally some of the smaller mills shade official prices about $1 a ton on large contracts. We quote: Painted Barb Wire, $2, and Galvanized, $2.30, in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

**Smooth Fence Wire.**—Specifications on contract orders are heavy, and mills are being rushed on deliveries. The market is firm, with the exception of occasional shading of about $1 per ton from official prices, by some of the smaller mills on large orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days.

| | |
|---|---|
| Jobbers, carloads | $1.70 |
| Retailers, carloads | 1.75 |

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

| | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | Base. | $0.05 | .10 | .15 | .25 | .35 | .45 | .55 |
| Galvanized | $0.30 | .35 | .40 | .45 | .55 | .65 | 1.05 | 1.15 |

*Chicago.*—Deliveries on Smooth Wire, not only to woven Wire fence manufacturers but to other consumers as well, are now being deferred from four to six weeks, and the accumulation of specifications would indicate that shipments will be still further delayed during the fall months. Quotations are without change, as follows: Jobbers, $1.85, f.o.b. Chicago, in car lots; retailers, $1.90.

*Pittsburgh.*—The mills are entering a heavy tonnage, orders placed in August being very much larger than in the same month last year. The outlook is that September tonnage will be equally as heavy. The impression still prevails that prices on all kinds of Wire products will be advanced during this or next month, and this is accelerating demand to a considerable extent. The market is generally firm, but occasionally some of the smaller mills shade official prices about $1 a ton on large orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Jobbers, carloads | $1.70 |
| Retailers, carloads | 1.75 |

The above prices are for base numbers, 6 to 9.

**Planes.**—Under date of September 1 Stanley Rule & Level Company, New Britain, Conn., announced a new schedule of prices on its Bailey Planes, to take effect at once. The moderate advances represented by the change are attributed to market conditions with which the trade is entirely familiar.

**Copper Wire.**—The strength of the Copper market and the advances which have taken place have resulted in higher prices for Copper Wire, an advance of ¼c. having been within a few days announced. This brings the price up to 20¼c. in car lots, a slight advance being made for smaller parcels.

**Shot.**—A similar condition prevails in the Shot market, an advance of 5c. per bag of 25 lb. going into effect with the opening of September. This makes the card prices as follows, terms, f.o.b. New York, net cash 30 days, or 2 per cent. discount for cash in 10 days:

| | 25-lb. bags. Per bag. | 5-lb. bags. Per bag. |
|---|---|---|
| Drop Shot, sizes smaller than B | $1.90 | $0.45 |
| Drop Shot, B and larger sizes | 2.15 | .50 |
| Buck and Chilled Shot | 2.15 | .50 |
| Dust Shot | 2.35 | .55 |

From these prices an abatement of 10c. per bag of 25 lb. is made on orders for ton lots and upwards.

**Asbestos and Asbestos Goods.**—This line is somewhat exceptional in a generally strong market, as there is a good deal of irregularity in connection with leading asbestos products. We have already called attention to the termination of the arrangement between manufacturers, under which the market was kept in pretty rigid control for a while, with prices materially higher than had been prevailing. The present condition of things may be regarded as a reaction, with animated competition and the development of lower prices. In this state of things there is an opportunity for purchasers to exercise a good deal of care in their buying, as quotations are uneven and the tendency in some lines at least is towards lower figures.

**Hatchets.**—Notwithstanding the disaster which overtook the agreement among the Axe manufacturers, the kindred line of Hatchets remains steady, with prices unchanged. The demand is good and there is some talk of the possibility of higher prices in the near future.

**Wire Cloth.**—The trade is watching the Wire Cloth market with a good deal of interest, awaiting the announcement of some definite policy in regard to prices for next season. The figures which have prevailed during the past year have not been satisfactory to manufacturers, but it is doubtful if the low prices which have been in force have helped the circumstances materially by diminishing competition or driving the smaller manufacturers from the field. It is understood that jobbers are placing orders for next season, but at prices which will be determined later, when the situation shall have clarified.

**Snaths.**—The Snath market is now an open one, the control of the National Snath Company having been relaxed. It is generally understood that this condition is brought about by the competition of independent manufacturers, who embarrassed the association makers somewhat during the past year. It is as yet too early to discover what the effect will be in the matter of prices. Merchants whose orders are ordinarily placed early are accordingly in a waiting attitude.

**Scythes.**—Following the recent announcement of price schedules on Scythes by leading manufacturers, it may be expected that the market will shortly develop some activity. By common consent, however, the solicitation of business from jobbing houses has been deferred a little

beyond the usual date. The prices published are about the same as those prevailing during the past season on the same grades and brands. Merchants have generally reported a light sale on Scythes this year, and considerable stocks are being carried over, which will of course tend to reduce the volume of business for 1907. At the same time the situation is said to be fairly satisfactory to the members of the pool, which continues in control of the market. Some slight changes are reported to have been made in the classified list of houses to whom jobbing prices are given, but the policy of interpreting liberally the term jobber will still be adhered to. The list of the smaller jobbers who are receiving recognition as jobbers is evidently a growing one.

**Enameled Ware.**—The withdrawal of prices the middle of August by the National Enameling & Stamping Company on Royal Granite Steel Ware has been followed by a stiffening in prices from time to time, and advances averaging from 5 to 10 per cent. on single coated Enameled Ware, as well as on Tin, Galvanized and Japanned Ware, and other goods in the House Furnishing and Kitchen lines. The cause is the familiar one of scarcity of both materials and labor and advances in each. The assertion is likewise made that indications point to further increases as the season progresses. Other important manufacturing interests in these lines of goods have ceased to obligate themselves on contracts at current prices.

**Rope.**—The quantity of Rope disposed of by manufacturers for the month of August was very satisfactory. During the past week the price of Manila Hemp has fallen off ¼ cent. per pound, but has had no effect upon Rope quotations, as manufacturers have stock purchased at somewhat higher prices. The decline in prices is attributed to larger demand and fairly large receipts. On account of the high prices of Jute Rope and the proportionate lower prices of Sisal Rope, a falling off in demand of the former is noticed. New York quotations on Rope are as follows: Pure Manila, 12¼ to 12½ cents; B quality, 11½ cents; Pure Sisal, 9 cents; No. 2 quality, 7½ to 7¾ cents; No. 1 Jute, ¼ in. and up, 8 to 8½ cents; No. 2 Jute, ¼ in. and up, 7 to 7½ cents per pound.

**Window Glass.**—Considerable advance has been made in the direction of delaying the starting of Window Glass factories this fall. According to reports the Amalgamated organization of workers agreed that if manufacturers would form an organization controlling 1800 pots before September 3, and enter into a working agreement with the American Window Glass Company providing for a uniform time for starting and stopping factories, and co-operate in the matter of fixing prices, that the workers in turn would not issue a wage scale to any manufacturer providing for a resumption of work before October 15. At a meeting of manufacturers held last week a representation of 1579 pots was in attendance to consider the foregoing proposition. It is stated that at that time the American Window Glass Company agreed to pledge its support to any legitimate move which would bring about better conditions and lay a foundation for profitable business during the fire of 1906-1907. This pledge, it is said, carried with it the understanding that factories were not to resume until October 15, or such a time as a start would be warranted by condition of stocks, and that prices were to be determined by committees representing hand operation and machine factories. In view of this understanding the manufacturers of hand operated factories in attendance at the meeting pledged themselves not to resume operations before October 15, and agreed to join a manufacturers' organization and to bind themselves to adhere to the stipulations by putting up a forfeit of $25 per pot, this to be conditional upon the securing of a membership for the organization of 1800 pots. A committee was appointed to secure the required number of pots to complete the organization, after which a joint meeting of the manufacturers' Wage Committee and the Wage Committee of the workmen will be held. The workmen realize that an early start would not be likely to secure them the permanent payment of an advance in wages and would probably result in the closing down of factories in midwinter, and manufacturers think that prospects of profitable business would be thrown away. It is said that jobbers are of the opinion that an early start of the factories would end the prospect of getting a profit from the stocks they now carry and that business would be demoralized for the coming year. Some jobbers, it is understood, have notified certain manufacturers who were preparing to resume early that if they did so they would not patronize them. The factory of the Co-operative Window Glass Company at Ceres, Allegheny County, N. Y., has been purchased by Pittsburgh, Pa., capitalists, who will greatly enlarge the plant and install improved machinery. Jobbers' quotations, from jobbers' list, October 1, 1906, are as follows: Greater New York, single, 90 and 5; double, 90 and 10 per cent. discount. Eastern District, except the Boston District, 90 and 10 per cent. discount for all sizes of single and double strength. In the Boston District quotations are reported as being 90 and 15 for all sizes of single and double strength.

**Linseed Oil.**—Buying continues light, as large purchasers consider crop prospects favorable to lower prices for Oil. Prices for Seed have declined on future shipments, but at current prices it is said that Oil cannot be produced at a profit. Large buyers are waiting for 30-cent Oil, but their expectations are not likely to be realized. The new crop of Seed is said to be safe from frost, and the prospects point to a large yield. New York quotations are as follows, according to quality and seller: City Raw, 38 to 39 cents per gallon; out of town Raw, 36 to 39 cents per gallon. Boiled Oil is 1 to 2 cents advance per gallon over Raw.

**Spirits Turpentine.**—Local demand is comparatively light, with the market about 1 cent higher than last week. New York quotations are as follows, according to quantity: Oil Barrels, 63½ to 64 cents; Machine Made Barrels, 64 to 64½ cents per gallon.

# Correspondence.

## "2 Off 10 Days."

*To the Editor:* The letters published in your columns during the past few weeks on the subject of "2 Off 10 Days" touch a sore spot with us.

We are manufacturers of goods made of steel. We formerly bought our steel on four months' 3 per cent. off 30 days and gave the same discount to our customers. A few years ago when the steel men changed their terms to 30 days ½ per cent. off 10 days, manufacturers in our line, changed their terms to 60 days 2 per cent. 10 days, but we now find that we are giving a higher rate of interest for money than we were before. In our line, competition is so close that the 2 per cent. is a good part of our profit, and, as we pay net 30, ½ per cent. off 10 days for our steel and spot cash for our labor, we can see no reason why we should not sell on net 10 or 30 days' time. We should be very glad to make a net price of 30 days ½ per cent. off 10 days and are endeavoring to get our fellow manufacturers to take this stand.

If this cannot be obtained, Mr. Brownell's suggestion to make the terms 60 days net, or 1-25 of 1 per cent. off for each day of prepayment, presents to us an admirable way of meeting the great abuses to which the 10-day discount is subject. CHICAGO.

The September or fall catalogue of Butler Bros., Chicago, is one of more than usual interest. Nearly 70 pink pages are devoted to goods for the holiday season, on which they have decided to do away with all discounts except one for cash. Special holiday terms on this line are announced as net January 1, or 1 per cent. discount if paid on or before November 20. Pages in the back give many helpful suggestions in regard to the purchase and sale of goods. The magnitude of the firm's business is effectively shown in a handsome colored insert, giving views of its various distributing and sample houses throughout the country.

# TRADE WINNING METHODS

*This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

## MINNESOTA MERCHANTS' FALL CATALOGUE.

T. H. LOYHED & SON, Faribault, Minn., have just issued a fall catalogue containing 40 pages in which illustrations, descriptive text and prices are given on Hardware, House Furnishings, Stoves, &c. This catalogue has been especially gotten up to combat the competition of the retail catalogue houses, and on the front cover under the title of "A Business Proposition" is an address to the public in which reasons are assigned why the firm is able to sell "as cheap and cheaper" than these houses. We make the following extract:

> The majority of people nowadays are keen buyers and expect to buy where they can do the best—where they get the best value for their money. Simply because a man is a friend of yours is no reason why you should pay him $1.50 for an article you can get somewhere else for $1. You can't afford to pay that 50 cents for friendship. Why can we sell as cheap and cheaper than the Chicago catalogue houses? Because we buy in carload lots direct from the factory as cheap in Faribault as they can in Chicago; so when you buy from them you must add the freight, postage, cost of sending the money order, &c.

This firm has been in business for more than half a century and attributes its success to "good goods, close prices, full count, square treatment and integrity of purpose." The catalogue was mailed to 3000 farmers in Faribault and tributary territory and will doubtless be effective in increasing the trade of this enterprising and aggressive firm.

## A QUARTETTE OF NEWSPAPER ADS.

WE reproduce herewith several newspaper announcements of the T. B. Rayl Company, 112-114 Woodward avenue, Detroit, Mich., which handles an extensive line of general Hardware, House Furnishings and Sporting goods. These advertisements will be recognized as

AND the days are shorter, and vacations are over, and the hammock comes down, and the white shoes come off, and we're sorry; but we're glad to see you back. RAYL'S full Force is once more at your service and anxious to be busy. We invite you. The most important thing in the house (unless there's a baby) is the kitchen, and there is no place in town like RAYL'S FOR KITCHENRY. All the best makes of GAS RANGES are on our floor; you can compare and select intelligently. WOODEN WARE, from TOOTHPICKS to KITCHEN CABINETS. People who want the best utensils and people who don't will find the best at RAYL'S. Sharp knife buyers will be delighted with the show of SLICERS and CARVERS and CUTTERS; it's worth just looking at. Will the "Lady of the House" please come in?
T. B. RAYL CO.
112 Woodward.

*"Glad to See You Back" Ad.*

telling their story in an attractive and effective manner and admirably serving the purpose of keeping the Rayl firm in the public mind. The personal note is a feature of all of them and the invitation to visit the store and look around is given with seductive warmth. The patronage of the fair sex is especially solicited, "Housekeeperings" being a department of the business to which a good deal of space and intelligent attention is given. The manner in which the subject of Builders' Hardware is touched on will be noted. It is evident that there is no nervousness here as to the ability of the firm to take care of its patrons

Dear Sir:
If you are building a house.....
or are going to, will you listen a minute? When you want a suit of clothes you don't make out the specifications—one coat, long tailed; one vest, cool arm pits; one pair trousers with two legs and a hitching strap, and then let the job to the lowest bidder. Now, do you? Well, when you want that BUILDERS' HARDWARE, don't do that either. Come down to RAYL'S and pick it out and get what you want, and we'll help you to a wise selection. We put you in touch with the biggest BUILDERS' HARDWARE makers in the U. S. We get their newest designs direct. It's worth something to you to have your Hardware different from the common jobbing stock, and to have it in charge of experts who do good work for the sake of good work, and who know how. We throw in the "know how," you only pay for the Builders' Hardware, and you'll have that satisfied feeling when you're done. Will you try it?
T. B. RAYL CO., 112 Woodward.

*For the House Builder.*

in this important and often perplexing line. All of the advertisements were two columns in width and five inches

This is a Public Address from Rayl's
to the public, pro bono publico. It is intended to remind the public that RAYL'S is a convenient and good place to buy HARDWARE, that there isn't any better place really. We hope you won't get tired of hearing us say so, but so many new folks coming to Detroit need a fresh invitation every week, and this is it. Come to RAYL'S!. For HOUSEKEEPERS' HARDWARE; not the Cheap John kind, but the best of everything in GAS RANGES, COOKERIES, CUTLERY and KITCHENRY. We assure you, oh housekeeper, that a visit to RAYL'S will interest you. For BUILDERS' HARDWARE, the newest designs in Door Trimmings fresh from the largest factories in the U. S. and with the best goods and the lowest prices, we have the "know how," and that's worth something to anyone building a house. If you want HARDWARE different from the ordinary jobber's stock, come to RAYL'S. We invite you
112-114 Woodward Avenue.

*For the Public Good.*

high. It will be observed that the firm does not adhere to one border, but uses a variety. Illustrations pertinent

T.B.RAYL Co.
HARDWARE
&C.
"Afterwhiles and one intends
To be gentler to one's friends."
Afterwhiles and we intend to always remember their names and greet them with a pleasant smile and never be out of anything in HARDWARE that they call for, from a MOLE TRAP to a DOLLAR INGERSOLL WATCH. Afterwhiles and we intend to never forget anything, never to make mistakes and never to fail to please everybody every time. But in the meantime, gentle reader, please brighten our "shop" with your continued visits. We wouldn't be so persistent if we could possibly get along without you, and if you don't know what you want, please come in and ask. Maybe it's TOOLS—RAYL'S for TOOLS. Maybe it's BUILDERS' HARDWARE—by all means RAYL'S for B. H. Maybe it's a GAS RANGE and KITCHENRY—RAYL'S for HOUSEKEEPERINGS par excellence! Rayl's for This and That and The Other Thing. There really isn't any better place. Many and many an old customer of Rayl's knows that. We invite you.
112 WOODWARD AVE.

*A Little Sentiment.*

to the line of goods treated or the dominant thought of the advertisement are always used.

H. H. Winters has purchased the store of C. W. Bell in Hays, Kan., and will conduct a retail business in Shelf and Heavy Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods.

## PRICE-LISTS, CIRCULARS, &c.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

E. H. H. SMITH SILVER COMPANY, Bridgeport, Conn.: Illustrated catalogue of Silver Plated Forks, Spoons, Knives, Ladles, Servers, Carving Sets, &c.

L. A. SAYRE & Co., Newark, N. J.: Catalogue and price-list No. 6, relating to Peach and Apple Parers, Pruning Shears, Ice Creepers, Hatchets, Axes, Adzes, Trowels, Punches, Tack Claws, Hammers, Saw Sets, Combination Pliers, Plumbers' and Gas Fitters' Bags, &c.

UPSON NUT COMPANY, Cleveland, Ohio: Price-list of Nuts, Bolts, Rivets, Axle and Sleigh Clips, Boxwood and Ivory Rules, Zig-Zag Rules, Miscellaneous Rules, Belt Fasteners, &c.

SAMUEL HARRIS COMPANY, 23-25 South Clinton street, Chicago, Ill.: Illustrated price-list of Machinists' and Manufacturers' Supplies and Tools.

JACKSON SLEIGH COMPANY, Jackson, Mich.: Catalogue No. 16, devoted to Buggies, Road Wagons, Concords, Stanhopes, Surreys, &c.; and catalogue No. 21, illustrating Light Cutters and Sleighs.

PONTIAC BUGGY COMPANY, Pontiac, Mich.: Catalogue illustrating medium price Vehicles, including Baggies, Phætons, Surreys, Runabouts, Concords and Business Wagons.

FINDLAY CARRIAGE COMPANY, Findlay, Ohio.: Illustrated catalogue relating to medium and high grade Vehicles, including Carriages, Phætons, Buggies, Surreys, &c.; also Business Wagons of all kinds.

H. W. JOHNS-MANVILLE COMPANY, 100 William street, New York: Pamphlet devoted to Phoenix asbestos stove lining. This is in dry form, and is put up in small, medium and large boxes.

THE OHIO STRUCTURAL IRON COMPANY, Sandusky, Ohio: Jail catalogue A, relating to jail cells, window guards, plate and lattice doors and miscellaneous jail work. The company makes a specialty in the jail cell line of what is known as the lattice construction, suitable for small calabooses and lockups in small towns.

OLIVER IRON & STEEL COMPANY, Pittsburgh, Pa.: Illustrated edition of standard price lists of Bolts, Nuts, Washers, Rivets, Picks, Mattocks, Grub Hoes, Wagon Hardware and Bar Iron and Steel.

DILLE & MCGUIRE MFG. COMPANY, Richmond, Ind.: Illustrated catalogue and price list of Lawn Mowers.

A. ROSENBERG MOTOR & MFG. COMPANY, Baltimore, Md.: Booklet referring to Water Motors for household use, Fans, &c.

## REQUESTS FOR CATALOGUES, &c.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

From T. C. GARRITY & Co., Vesper, Kan., who have bought out the Hardware, Stove, Implement, Sporting Goods and Harness business of J. F. Schnell.

FROM FOY HARDWARE COMPANY, Eufaula, Ala., who expect to push the wholesale business more vigorously than ever before. The company will be glad to receive catalogues and quotations relating to the different lines handled, including Hardware, Sporting Goods, Agricultural Implements, Builders' Supplies, Mill Supplies and House Furnishings.

FROM SAWYER HARDWARE COMPANY, Canton, Mass., under which style George F. Sawyer has commenced the retail Hardware, Stove and Mill Supply business. Mr. Sawyer learned the business with the Dana Hardware Company, Boston, and for several years past has acted as traveling salesman for Frye, Phipps & Co., of the same city.

FROM SKIATOOK HARDWARE & FURNITURE COMPANY, Skiatook, Ind. Ter., successor to C. C. Nickles.

## ORGANIZATION TO DEFEAT PARCELS POST.

AN organization has been formed in New York, under the style of the Merchants' League of America, the object of which is to conduct a systematic campaign against parcels post and other legislation favorable to the catalogue and mail order houses. The movement has only just started, but several thousand letters have been sent out to merchants in different parts of the country calling their attention to the menace of such legislation, and urging them to co-operate in an effort to crush it when presented at the next session of Congress, taking advantage of the opportunity afforded by the November elections to put candidates on record in regard to the measure. Frank A. Selah is president of the League, and E. S. Luther secretary. From the latter it is learned that Hardware merchants have quite generally shown a disposition to support the movement, and he has received much assistance from the officers of various Hardware associations.

## TRADE ITEMS.

ARRANGEMENTS have been made whereby the Railway Specialty & Supply Company, Great Northern Building, Chicago, has become sole selling agent for the United States, Canada and Mexico for the Smith Improved Lock Nut, manufactured by the Smith Improved Lock Nut Company, Rockford, Ill.

GLACIER METAL COMPANY, Richmond, Va., is distributing a unique souvenir match safe which effectively makes the point that the Glacier Anti-Friction Metal is "matchless." The souvenir may be had on application as long as the supply lasts, by dealers in and consumers of Babbitt metals.

THE REX FILE & SAW COMPANY, successor to the Jamestown File Works, Jamestown, N. Y., is now thoroughly established in the new plant erected at New Comerstown, Ohio. The plant has a daily capacity for producing 500 dozen Files, which are marketed under the Rex Brand. The officers of the company are David D. Lewis, president; M. Yingling, vice-president; Will A. Beers, secretary, and S. B. Mulvane, treasurer.

THE BENNETT BROS. COMPANY, 41-51 Payne street, Lowell, Mass., will open a large gasoline engine, windmill, tank and general implement transfer house at Jacksonville, Fla., in time for the fall business. Only the best goods, we are advised, will be handled in these lines.

JUDGE EDWARD WHITSON, sitting in the United States district court, has just handed down an opinion in the case of the Spaulding Mfg. Company against the Inland Empire Implement and Hardware Dealers' Association making permanent pendente lite an injunction prohibiting the association from harrassing the salesmen of the company. The association had been waging a war on the peddlers of Implements, Buggies, &c., with a view to driving them out of its territory, and the Spaulding company applied for and obtained a temporary injunction against the association a month or two since, which has now been made permanent pending suit. The officers of the association have appealed to the United States Circuit Court of Appeals from the order, and a strenuous legal fight is in prospect.

AT a recent meeting of the stockholders of the Piedmont Hardware Company, Danville, Va., it was decided to increase the capital stock, which is now $80,000 fully paid in, including surplus. The enlarged capital was necessitated by the increase in the company's business.

## SOME EXAMPLES OF JAPANESE MANUFACTURE.

THE accompanying engravings are reproduced from various articles of every day use as manufactured and sold in Japan from originals recently received from our correspondent, John L. Sardy, now in that country on a business trip around the world. It is apparent even from a cursory view of the illustrations that the real ar-

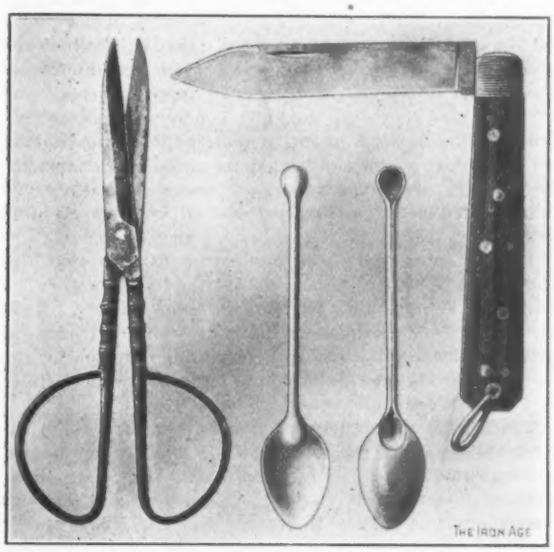



*Fig. 1.—Scissors, Pocket Knife and Small Spoon.*

ticle is of the crudest character. Fig. 1 shows a pair of 6-in. Scissors, apparently made of wrought iron, the bows of which are formed by simply curving the handle ends without joining them to the main portion of handles. The pivot is a poor example of riveting. These Scissors retail in Japan for 25 sen, the American equivalent of

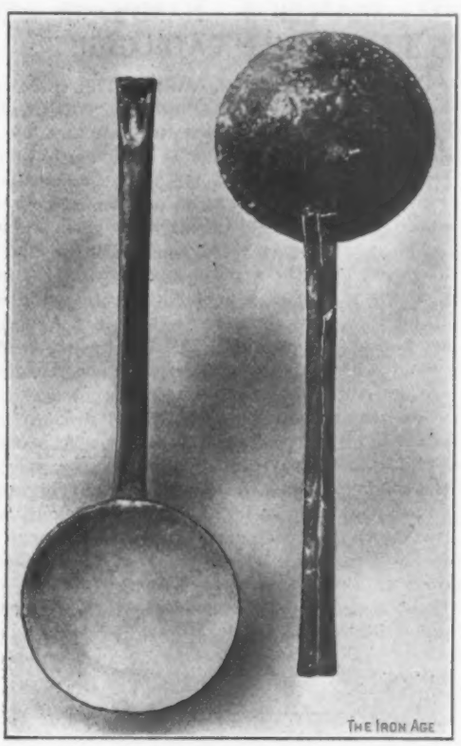



*Fig. 2.—Two Views of an Enameled Ware Spoon.*

which is 12½ cents, 2 sen equalling one American cent. In actual use they cut fairly well.

The Pocket Knife is a good companion piece as to general style, workmanship and quality, it being doubtful whether such a product could be sold in the United States at any price for other than curiosities. It is 4½ in. long, closed, and has a 3½-in. blade. The lining, bolster, ring to hang it by and the three smaller rivets are brass, the unpolished wood scales or handles of some wood resembling our black walnut, being partially held to lining by the five lead rivets on each side, the latter having a diameter of 5-32 in. There is also the usual steel back spring. Little can be expected from the blade for other than the cutting of soft materials. This article is sold for 35 sen. The Tin Spoon, 4½ in. long, two views of which are given, is rather well formed from a single piece of thin tin plate of poor quality. In size, it resembles Spoons used for after dinner coffee and sells for a half sen each. Fig. 2 is tangible evidence of an attempt at the manufacture of Enameled Ware, which is but

**Burlesque, at Best,**

from the Western point of view. The bowl of the Spoon or Ladle is round and about 3¼ in. across with a depth of ¾ in., the inner surface consisting of a whitish enamel, the outer portion and handle being an effort at gray enameling. The handle is riveted to the bowl before the article is enameled. The market price of this Spoon at

*Fig. 3.—Japanese Business Card.*

retail is 2 sen. To the average American or European the entire exhibit would be accepted only as mementos or curios for preservation in a cabinet along with tomahawks, arrow or spear heads and wampum belts, and if the imitative, energetic, enterprising and resourceful Jap just beginning to find himself in manufactures could be depended on to make no further progress, there would be

**No Need to Fear**

a commercial invasion. The success of the Japanese, however, in other lines of production, to which more attention has been given, and the possibilities of future manufacturing enterprise will well repay a study of economic conditions there at intervals. Fig. 3 illustrates the business card of a native Japanese Hardware mer-

*Fig. 4.—A Typical Japanese Hardware Shop.*

chant, the original of which is 3¾ x 2⅜ in. in text, evidently a compromise between English and Japanese. The last engraving, Fig. 4, presents in a measure the appearance of a Japanese Hardware store or shop, despite the difficulties of light and shade in getting the negative, which nevertheless gives the outline and some detail of the place where a native merchant bargains and trades.

## PIKE MFG. COMPANY'S PRIZES FOR MERCHANTS AND TRAVELING SALESMEN.

THE PIKE MFG. COMPANY, Pike, N. H., is about to put in operation a novel plan with a view to increasing the sale of its numerous and complete lines of Sharpening Stones for all purposes. Notwithstanding the fact that the increase alone in sales for the year ended June 30, 1906, was greater in amount than the entire business for a whole year when E. B. Pike became president 12 years ago, Mr. Pike believes a certain amount of stimulation by means of cash prizes will overcome much of the inertia inherent in handling a stock of Sharpening Stones. He also realizes that such a stock has not the latent power to attract that fine cutlery or other showy commodities have; hence too often the tendency simply to execute orders or show the goods when called for, rather than from choice pushing the line by attractively displaying it, advertising it and calling customers' attention to the merits of the goods, the merchant qualifying for the work by reading the company's excellent trade literature on the intrinsic merits of each kind of stone and the purpose for which it is intended. These illustrated pamphlets, in concise form, together with other helpful printed matter, can be obtained for personal use or distribution to customers for the mere asking. Where a carpenter or other mechanic has one Sharpening Stone for all purposes an alert salesman can convince him that two or more will quickly repay the cost in time saved and better results accomplished by at least having a quick cutting stone for certain uses and a finer grit for fine tools and hard woods.

To make the sale of these goods attractive to merchant and traveling salesman alike the prizes described below, well worth an effort to secure, are offered by the company.

PRIZES TO TRAVELING SALESMEN.

To the wholesale Hardware salesmen making the largest sales of the company's products for one year these prizes are announced: First prize, $1000; second prize, $500; third prize, $250, and ten additional prizes of $100 each. To all others who enter the contest 5 per cent. on their sales of the company's goods for one year will be awarded.

PRIZES TO RETAIL HARDWAREMEN.

To retail Hardware merchants the following prizes are offered for the display and sale of the company's sharpening stones: First prize, $100; second prize, $50; third prize, $25, and 10 additional prizes of $10 each. The first prize will be given to the retail dealer who makes the best and most comprehensive display of the company's goods in his show window or on his counters for one year and whose purchases during the year are not less than $.CC. The second prize will be given for an exhibit of the company's goods for not less than nine months and purchases during the year of not less than $200. The third prize will be given for the best exhibit of goods for a period of six months and purchases during a period of one year of not less than $100. Ten dollars each will be given to 10 other dealers for making exhibits of goods for three months and whose purchases amount to not less than $100 for the year.

To other retail merchants for making exhibits for periods of two months to a year the following premiums will be awarded:

*Choice One Year Exhibits:* One No. 2844 combination Razor Hone in silver case with chamois lined compartment for Razor in the cover, the Hone in the case being a 7-in. extra choice selected Belgian. One No. 2843 silver case containing Razor Hone, but without compartment in cover for Razors;

*Choice Six Months' Exhibits:* One No. 2845 natural stone Carving Knife Hone or Steel with handsome silver handle. One No. 2842 handsome silver box containing Arkansas stone about 3½ x 1;

*Choice Three Months' Exhibits:* One No. 2832 handled silver box, containing an Arkansas Stone about 2 in. long by 1 in. wide. One No. 2833, similar to No. 2832 but without handle; has an ornamental silver dog on the cover.

*Two Months' Exhibit:* Silver souvenir.

Full particulars in regard to these prizes and conditions relating to them will be furnished by the company, which is desirous of hearing from merchants and traveling salesmen promptly who desire to enter the contests for the prizes.

THE GROWTH OF THE COMPANY'S BUSINESS.

The Pike business of manufacturing Sharpening Stones was established in 1823. From small beginnings it has increased very rapidly in the last 10 years, owing to the pushing, progressive policy of the present management and the desire to make it as easy as possible for merchants to handle the line, coupled with broad views and square treatment. Along these lines the results have been very gratifying in connection with the numerous assortments in display cabinets introduced last year, the various styles providing not only a display in attractive form varying in kind, quantity and cost, but constituting a selling base, as they attracted the attention of customers by their neat appearance, accompanied as they are with printed retail selling prices and suitable circular matter.

In this connection it is interesting to note that the company has recently entered on the manufacture of Corundum Wheels and products in large variety. This department of its business is fully and attractively shown in a special catalogue containing information in regard to corundum and its manufacture, as well as illustrations of Wheels and other products.

The broad, comprehensive guarantee of the company insures the merchant against possible loss, as any dealer can return to the company at any time in 1 year or 20 anything bought of it that he cannot sell and get the same amount of money in return that the company received for the goods when originally sold. Furthermore, the goods bearing this name and trademark are guaranteed to give good satisfaction to the user or the money will be refunded. Notwithstanding rigid inspection and the rejection of much apparently good material the chief packer is also instructed not to allow anything to pass his department for shipment that he would not be willing to buy and use himself.

## NORVELL-SHAPLEIGH HARDWARE COMPANY'S FALL CATALOGUE.

NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo., is now distributing its fall catalogue. This is the catalogue upon which the company has been at work for some time and which is designed to help the retail Hardware merchant to meet the competition of retail catalogue houses, by offering unusual values which the company have been able to pick up from manufacturers. The catalogue is attractively printed and contains 235 pages. On the artistic front cover prominence is given to the platform on which the catalogue stands, "that a jobber's first duty is to help his customer—prices are better than words." The catalogue contains a number of pink sheets, the prices on the goods covered by which are net, subject to the usual terms. Prices on all other goods are list, a separately bound discount sheet being issued applying to them. The net price goods are put on pink sheets, so that merchants may see at a glance the goods on which the company is offering special inducements. On many goods in the catalogue only a few items are shown, this being especially true in the case of Hardware, Lamps, Cutlery, Guns, Iron Beds, Go-Carts, &c., special catalogues covering which will be sent on application. The company states that it has purchased large quantities of the goods shown in the catalogue, but can only take orders subject to stock on hand. The prices are good as long as the supply lasts.

THE G. & W. MFG. COMPANY, 26 Cortlandt place, New York, of which J. H. Cook is president and treasurer, manufactures overhead Trolley Tracks and Trolleys, Louder Electrically Operated Traveling Cranes, Hoists and Blocks, Industrial Railroads and Cars, Structural and Ornamental Iron Work, Special Machinery and kindred goods for factories, warehouses, stores and similar purposes.

# Postal Progress League Agitation.

FROM OUR SPECIAL WASHINGTON CORRESPONDENT.

WASHINGTON, D. C., September 4, 1906.

THE Postal Progress League, mysteriously financed more liberally than ever before in its career, is systematically perfecting plans to make a "whirlwind" campaign to secure the passage of a parcels post law at the short session of Congress next winter. As an alternative proposition, it is pushing the scheme for the consolidation of third and fourth class mail matter, which would mean the carrying of merchandise in the mails at 8 cents per pound, or one-half the present rate, thus creating a limited parcels post that would save the giant catalogue houses not less than $500,000 at the expense of the taxpayers of the country.

### Postal Progress League Active.

The campaign which the Postal Progress League has undertaken differs materially from the work it has done heretofore. Being a voluntary organization engaged in pushing a proposition that is not especially popular it has been obliged in the past to depend upon the subscriptions of its own members for funds with which to prosecute its work. This summer, however, the League appears to be liberally supplied with funds, and Secretary James L. Cowles is making a tour of the country obtaining indorsements from misguided business organizations of the Hearst and Henry Parcels Post and the Consolidation bills.

In his work in favor of the parcels post, Mr. Cowles seeks to popularize his crusade by attacking the express companies, on the one hand, charging them with "robbing the people;" while, on the other, he assails Chairman Overstreet of the House Post Office Committee, who he declares, "some say, is the representative of the Lackawanna Railroad in the House." It is, of course, a perfectly safe proposition to attack the express companies, for no one is disposed to be their champion, and it is doubtless equally safe to assert that "some say" that Mr. Overstreet is the representative of a railroad company rather than of his constituents, for experience has shown that public men usually ignore such statements when made by irresponsible persons.

### Mr. Overstreet's Friends

among the retail hardware merchants of the country, both in his own state of Indiana and elsewhere, will be greatly pleased to learn that his splendid work in opposition to the wild schemes of the parcels posts boomers is in a fair way to be recognized. There are thousands of merchants in all lines who only know of Mr. Overstreet as the chairman of the House Postoffice Committee, but who regard him as a warm friend and champion, simply because of his attitude in opposition to all forms of catalogue house legislation. In spite of the tremendous efforts of the parcels post advocates, occasionally supplemented by the postoffice authorities themselves, who from time to time have favored consolidation and post check schemes, Mr. Overstreet has stood like a rock. His colleagues on the House Committee are also entitled to a share of credit for the failure of parcels post legislation for they have warmly supported him in every crisis.

### Consolidation Scheme if Not Parcels Post.

That the efforts of the Postal Progress League are to be centered upon the consolidation scheme bill in the event that a parcels post measure seems out of the question next winter is apparent from a statement made by Mr. Cowles at the Photographers' Convention held in Niagara Falls a few days ago, in the course of which he said:

> Since December 6, 1905 (the opening day of the last session), the Postal Committee has been deliberating on House bill 4549, making the rate on all merchandise parcels up to 4 lb. 8 cents a pound, as in 1847, and as persistently demanded by the Post Office Department for the last 17 years. It is surely time this bill was favorably reported. Every day's delay in its enactment into law means a loss of thousands of dollars to the post office and to the public. The passage of the bill will largely increase the postal revenue and will decrease the postal deficiency.

The measure referred to by Mr. Cowles is the Henry bill, cutting in half the rate on merchandise. It was originally advocated by Third Assistant Postmaster General Madden, who estimated that the actual loss to the Government would be $1,901,780 the first year the change should be put into force. Mr. Madden ventured the prediction that ultimately there would be a sufficient increase in the use of the mails for the handling of merchandise to wipe out the deficiency, but never, even in his most enthusiastic moments, has he ventured to predict a net increase of revenue as the result of the change. Yet Mr. Cowles declares that every day's delay in the enactment of the Henry bill means a loss of thousands of dollars to the postoffice and the public. How the public, who pay the revenues, and the department which receives them can both profit to the extent of thousands of dollars per day as the result of the passage of a measure which Mr. Madden admits would cost the Government nearly $2,000,000 a year at the outset, is one of those paradoxical problems which only a parcels post advocate is qualified to solve.

### League's Opponents Not Idle.

While the parcels post league is working for sentiment in favor of catalogue house legislation next winter, the opponents of these schemes are not idle. Recently two important recruits have been gained for the opposition. The National Association of Manufacturers, in a recent issue of its organ, *American Industries*, made a vigorous assault upon the domestic parcels post proposition, and exposed some of its many fallacies from the standpoint of an up-to-date manufacturer.

The efforts of the catalogue houses recently put forth to induce farmers and other residents of rural communities to deposit their funds in "savings departments" established by the mail order houses have aroused the country bankers in all sections, and promise to have the effect of a genuine boomerang.

### Tobacco Interests Up in Arms.

The energetic opposition of nearly the entire cigar and tobacco trade has recently been called forth to meet the efforts of the catalogue houses and a few individual manufacturers to sell cigar and tobacco products through the mails. The campaign of the tobacco interests will be followed with close attention. There are upwards of 30,000 manufacturers and more than 100,000 retailers in the trade, and, led by the principal organ of the industry, the *Tobacco Leaf*, they are going to work in a thoroughly practical fashion. The *Tobacco Leaf*, in an address to manufacturers and retailers, makes the following very pertinent sgguestions:

> In politics, get the pledge of all candidates for Congress that will vote against parcels post legislation. Do not wait until they are elected to Congress before exacting this pledge. Get it from all candidates. If every retailer in each Congressional district will write each candidate as soon as he is nominated, the flood of letters will have the desired effect. If your favorite candidate cannot see his way clear to vote against such a bill, do not hesitate, remember it is a business matter, and both vote and openly work against him, and tell the reason why. It is a good reason and nothing to keep covered up. Let your friends know how important you consider it.
>
> Remember this political side to this question. It is very important. Do not delay writing to every Congressional candidate in your district, as soon as he is mentioned for nomination, and work for those who see as you do. Give your neighbors to understand that you consider this a vital issue to the country, and affects them as well as yourself. Get them to see the fact that practically all the advantage of the parcels post bill is for the mail order houses, and that the Government, which is the people, will have to pay the big postal deficit which will be caused by its passage.

### The Congressional Elections

will take place in a little more than 60 days. Retail merchants in all lines should bear in mind the advice above quoted, which has so often been urged in this correspondence. Merchants should not dismiss the matter with the mental comment that it is "an old story," but should remember that the men who are chosen as their representatives at the polls next November will have full charge of all Congressional legislation for two entire years. It will be too late to lock the barn door after the horse is stolen.

W. L. C.

## BARNEY & BERRY'S NEW SKATE CATALOGUES.

BARNEY & BERRY, Springfield, Mass., have just issued two new illustrated catalogues for this season, one of which shows their new line of Ball Bearing Roller Skates. In these Skates, of which there are several varieties, having fiber, boxwood and steel rolls cut from solid metal, the balls are ¼ in. of high-grade steel, each set in a ball retainer. The catalogue of Ice Skates, 32 pages, contains in addition to well-known styles the all clamp rocker blade to clamp on shoe with key, very moderately priced. Another, known as E. S., is a Hockey Skate, to be fastened to shoe with Screws, listed at $1 per pair for bright and $1.40 per pair for full nickel plate. There is also a new Ladies' Hockey in Grade 2, full nickel, at $3.50 list. Another important feature is a system of numbering, giving a distinct number for every style and grade, which in connection with the length positively indicates any Skate.

## MISCELLANEOUS NOTES.

### Combined Pepper Grinder and Salt Shaker for Table Use.

E. C. Fischer, 640 Broadway, New York, manufacturer of the Combined pepper grinder and salt shaker for individual table use, illustrated in these columns February 8 last, has now brought it out with glass receptacle for pepper as well as for the salt above. At first the bottom or pepper compartment, having a small handmade steel grinder at the bottom, was made of metal and silver or nickel plated, according to price, but now both condiments, salt above and the whole pepper below, are in plain view, thus enabling a person at table to have in one utensil both articles and the material in sight. Only the bottom serving as a frame for the grinding device, the milled center and perforated cap of salt shaker are metal, all of which are finely plated, making not only a useful table article in which the pepper from the original pepper corn is ground as it is needed but ornamental as well. Enough pepper is held to last a person from one to three months, according to the way it is used. It is the intention to have the two glass compartments made in two styles, pressed and cut glass.

### Kingston's Gauge Hatchet and Hammer.

Kingston-Hall Company, 542-550 Franklin street, Cambridge, Mass., has recently placed on the market patent gauge hatchets and hammers for use in rapid shingling and clapboarding, respectively, shown in the accompanying cuts. The gauge on the hatchet, Fig. 1, can be set anywhere from 2 to 7 in. for use in shingling, while the construction is such as to render adjustment easy. The device is alluded to as being simple, inexpensive, most compact and as being used with a minimum motion of the hand and arm. The gauge hammer, Fig. 2, can be used for putting on siding and clapboarding, also roof lath, a 1 x 2 in. furring strip being used in some parts of the country as a support for shingles.

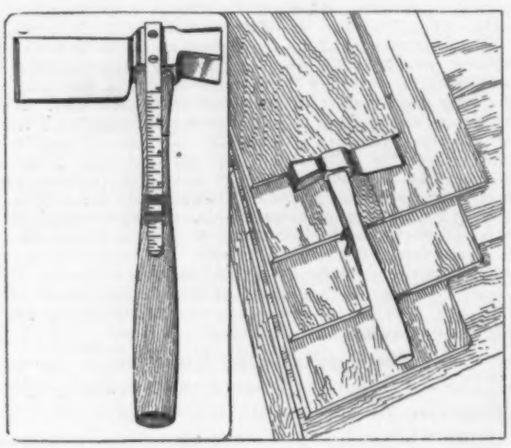


*Fig. 1.—Kingston's Gauge Hatchet and Hammer.*

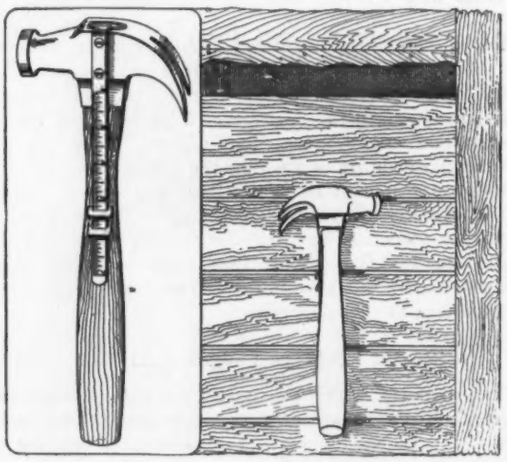
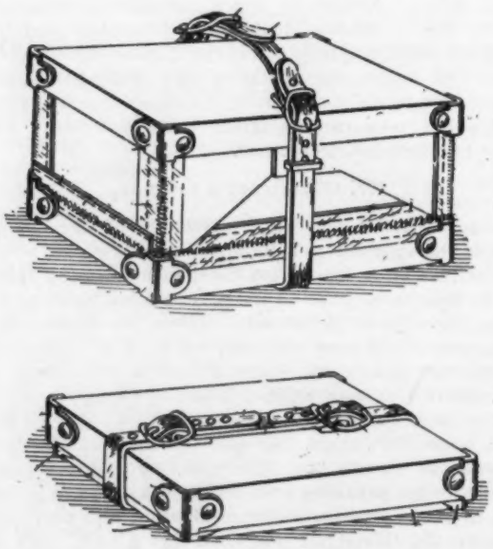


*Fig. 2.—Kingston's Gauge Hammer.*

### Folding Lunch Box.

The folding lunch box shown in the illustrations ready for use and folded is manufactured by the Atlas Mfg. Company, Hampton, N. H. As will be noticed in the cut of the box folded no attempt is made to fold it perfectly flat, the space of 1 in. being left at the bottom in order that a tea kettle, napkin, &c., may be carried. The side walls are hinged to the bottom of the box, and flaps are hinged to the upright margins of the end walls, overlapping the side walls and one another. The side walls carry staples and pass through the overlapped flaps when the box is set up. A retaining strap passes through the staples, held by a swivel, which permits it to be turned to pass lengthwise of the box when it is folded.



*Folding Lunch Box.*

THE CHICAGO IMPLEMENT COMPANY will open a branch store and warehouse in Spokane, Wash., the coming fall. It is the intention of the company to erect a one story warehouse 50 x 100 ft. to cost $5000, after which work on the store will begin.

## Clark's Huskers and Wrist Bands.

The accompanying cuts represent huskers and wrist bands manufactured by R. F. Clark, 100 Lake street, Chicago, Ill. The husker shown in Fig. 1 is a cheaper con-

*Fig. 1.—Little Joker Husker No. C1.*

struction, and has a narrower wrist band than the palm No. C, illustrated in our last issue, but has 15 holes for hook adjustment and is lower in price. The husker shown in Fig. 2 has an improved finger cot-shaped shield,

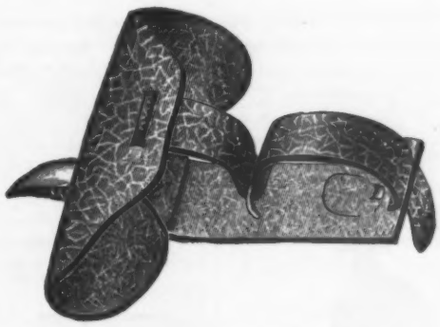


*Fig. 2.—Banner Husker No. 2638.*

covering the end of the finger, which is referred to as being of great benefit. The mitten pin, Fig. 3, has a wide hand leather and hand part. The pin is extra heavy,

*Fig. 3.—Mitten Pin No. 12.*

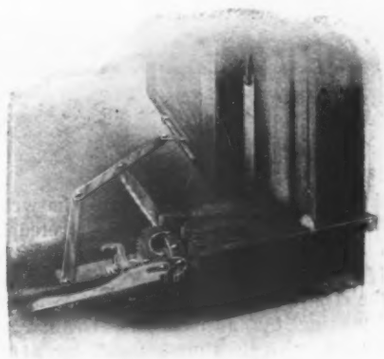
with a buckle in the lower end of the pin. The ideal wrist band, Fig. 4, is made in four grades of various kinds of leather. It is so arranged that the strap draws

*Fig. 4.—Ideal Wrist Band.*

from both sides of the center and the buckle in the center. The point is made that the band has a tension its full width, with but one buckle to fasten.

## Sperry Casement Window Lock and Adjuster.

A window lock and adjuster has just been placed upon the market by E. P. Sperry, 1207 Monadnock Block, Chicago, Ill., which is shown in its application to a casement window in the accompanying illustration. The parts of the fixture, except the locking lever and ratchet, which are of steel, are stamped from heavy rolled brass, thus insuring evenness of construction and workmanship. The parts are assembled with specially designed hard brass shouldered rivets, and all the working parts are made extra strong so as to insure great durability. The device is such, the manufacturer points out, that any carpenter can put it in place, as when sent out it consists of only one piece, and is accompanied by explicit directions for its manipulation. One of the great difficulties heretofore has been to devise some method of not only opening a casement window an inch or so for ventilation, but holding it perfectly rigid in that position. This, it is claimed, is accomplished by the Sperry fixture, which has 14 points of adjustment, ranging from about

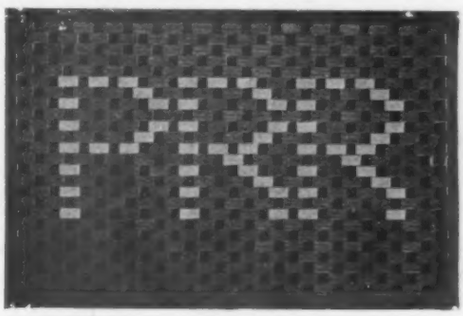


*Sperry Casement Window Lock and Adjuster.*

1 in. to 90 degrees, holding the window with equal rigidity in any one of them. Reference is made to the fact that the device is of positive action, simple operation, rigid adjustment, and draws the window shut and holds it firmly in place when closed—a new and important feature in this class of fixture—doing away with the necessity of an auxiliary lock on casement windows of ordinary hight.

## Newark Combination Rubber-Metal Mat.

Newark Mat Company, 66-68 Marshall street, Newark, N. J., New York office 149 Church street, is manufacturing the mat shown in the accompanying cut. It is made of small blocks of rubber 2 x 1 x ½ in. thick, the blocks being bound on each side with pieces of brass ⅜ in. high, hinged together with brass rods, so that the mat can be rolled up like an ordinary piece of carpet. Brass is used to prevent rusting, which is liable to make spots on tile or mantle floors. The manufacturer



*Newark Combination Rubber-Metal Mat..*

claims for the mat that it is very durable and flexible, and will not crack or break in handling. It is reversible, and, it is said, will not warp or curl at the edges or cut floors. It is noiseless to walk upon and offers no danger of slipping. It can be made in any color and numbers or names can readily be inserted, as shown in the cut. The mat is recommended for use in elevators, vestibules, railroad stations, stores, schools, factories, street cars and cafés. For yachts and ocean going vessels it is especially adapted, as it is rustless and cannot be injured by salt water. Special shapes and sizes will be made to order at short notice.

## Steel Nut Wrench No. 54.

Bemis & Call Hardware & Tool Company, Springfield, Mass., has just put on the market the steel nut wrench shown herewith. In its construction special attention has been given to strength, durability, and the quality of material used, and it is adapted for use where the wooden handle wrench will not answer. It is pointed out that water, steam or mud cannot injure it, and that the wrench is built on correct mechanical principles and is practically indestructible. The head, bar and shank are in one piece,

*Steel Nut Wrench No. 54.*

steel forged. The handle is forced onto the wrench bar under great pressure, and then securely riveted in place. Being oval in form it fits and does not tire the hand. The nut gives great gripping power to the jaws, as on nuts with the corners rounded off the whole hand can be applied in making the adjustment. Ordinary adjustment can be made with the thumb and finger. It is made in seven sizes, from 6 to 18 in., inclusive, with steel handle, as shown in the cut. The 21 and 24 in. wrenches have a handle made by a continuation of the bar.

## Fan and Bottle Washer for Divine Water Motor.

Divine Water Motor Company, Utica, N. Y., represented by Smith & Hemenway Company, 108 Duane street, New York, is offering two new and useful attachments for the Divine water motor, a fan and a bottle washer. This motor, it may be remarked, is intended for any faucet, may be attached or detached in a few seconds and develops ⅛ hp. on 80 lb. pressure, which, it is stated, is abundant power for sharpening axes, knives and other tools, scouring, polishing and buffing kitchen utensils, instruments and running all kinds of light machines, such as sewing machines, dental lathes, &c. The fan, illustrated in Fig. 1, is furnished with or without guard. It is described by the manufacturer as similar to the fans used with electric motors, is finished in brass of dull, Roman color, and can be turned in any direction. In a hot kitchen, on ironing or baking days, it will afford a cooling draft of air at very light initial or running expense. The bottle washer has a heavy bristle brush with galvanized stem and strong brass holder. It may be had either in pint or quart size, and when attached to the 4-in.

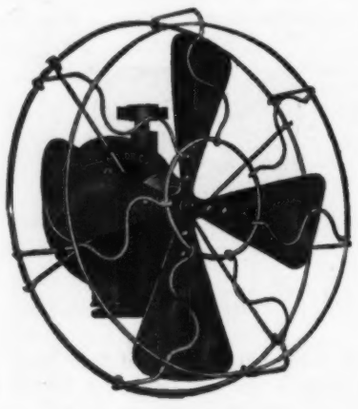


*Fig. 1.—Divine Water Motor Fan.*

*Fig. 2.—Bottle Washer.*

water motor is declared to be very efficient for cleaning bottles, lamp chimneys, globes, glasses, hollow glassware and metal ware, &c.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. | |
|---|---|---|
| Linseed, City, raw | | .38 @39 |
| City, Boiled | | .39 @40 |
| State and Western, raw | | .37 @38 |
| Raw Calcutta Seed | | @68 |
| Lard, Extra Prime, Winter | | .69 @70 |
| Extra No. 1 | | .46 @47 |
| No. 1 | | .40 @44 |
| Cotton-seed, Crude, f.o.b. mills | | @22½ |
| Summer Yellow, Prime | | 36½@.. |
| Summer Yellow, off grades | | @.. |
| Sperm, Crude | | .53 @.. |
| Natural Spring | | @.. |
| Bleached Spring | | @.. |
| Natural Winter | | .63 @65 |
| Bleached Winter | | .66 @67 |
| Bleached Winter, Extra | | .68 @69 |
| Tallow, Prime | | .51 @53 |
| Whale, Crude | | .32 @33 |
| Natural Winter | | .43 @44 |
| Bleached Winter | | .45 @46 |
| Extra Bleached Winter | | .47 @48 |
| Menhaden, Brown, Strained | | .26 @29 |
| Light, Strained | | .27 @30 |
| Bleached, Winter | | @.. |
| Extra Bleached, Winter | | @.. |
| Southern | | @.. |
| Cocoanut, Ceylon | ℔ lb | 7⅝@ 7½ |
| Cochin | ℔ lb | 8¼@ 8½ |
| Cod, Domestic, Prime | | .30 @33 |
| Newfoundland | | .35 @37 |
| Red, Elaine | | .37 @42 |
| Red, Saponified | ℔ lb | 4¾@ 5 |
| Olive, Italian, bbls | | .52 @56 |
| Neatsfoot, Prime | | .48 @49 |
| Palm, Logos | ℔ lb | 6⅛@.. |

### Mineral Oils—

| | | |
|---|---|---|
| Black, 29 gravity, 25@30 cold test | ℔ gal. | 10½@11½ |
| 29 gravity, 15 cold test | | 11½@12½ |
| Summer | | 10½@11½ |
| Cylinder, light filtered | | .18 @19 |
| Dark filtered | | .16 @17 |
| Paraffine, 903-907 gravity | | 13½@14 |
| 903 gravity | | 12½@13 |
| 883 gravity | | 10¼@10⅝ |
| Red | | 12½@14 |

### Miscellaneous—

| | | |
|---|---|---|
| Barytes: | | |
| White, Foreign | ℔ ton | $17.50@19.00 |
| Amer. floated | ℔ ton | 19.00@..... |
| Off color, No. 2 | ℔ ton | 13.50@15.00 |
| Chalk, in bulk | ℔ ton | 3.00@ 3.25 |
| In bbls | ℔ 100 lb | ..@ .35 |
| China Clay, English | ℔ ton | 11.00@17.00 |
| Cobalt, Oxide | ℔ 100 lb | 2.50@ 2.60 |
| Whiting, Common | ℔ 100 lb | .43@ .48 |
| Gilders | ℔ 100 lb | .50@ .55 |
| Ex. Gilders | ℔ 100 lb | .55@ .60 |

### Putty, Commercial—℔ 100 lb

| | | |
|---|---|---|
| In bladders | $1.70 | @1.85 |
| In bbls. or tubs | 1.20 | @1.40 |
| In 1 lb to 5 lb cans | 2.65 | @2.95 |
| In 12½ to 50 lb cans | 1.50 | @1.90 |

### Spirits Turpentine—℔ gal.

| | | |
|---|---|---|
| In Oil bbls | .61 | @64½ |
| In machine bbls | .64½ | @65 |

### Glue—

| | ℔ lb | |
|---|---|---|
| Cabinet | | .11 @15 |
| Common Bone | | .7 @ 9 |
| Extra White | | .18 @24 |
| Foot Stock, White | | .11 @14 |
| Foot Stock, Brown | | .8 @11 |
| German Hide | | .12 @18 |
| French | | .10 @40 |
| Irish | | .13 @16 |
| Low Grade | | .9 @12 |
| Medium White | | .14 @17 |

### Gum Shellac—℔ lb

| | | |
|---|---|---|
| Bleached Commercial | .45 | @47 |
| Bone Dried | .55 | @57 |
| Button | .40 | @50 |
| Diamond I | .54 | @55 |
| Fine Orange | .50 | @52 |
| A. C. Garnet | | @40 |
| G. A. L. Garnet | .41 | @44½ |
| D. C | .58 | @60 |
| Octagon B | | @52 |
| T. N | .47½ | @50 |
| V. S. O | | @55 |

### Colors in Oil—℔ lb

| | | |
|---|---|---|
| Black, Lampblack | .12 | @14 |
| Blue, Chinese | .36 | @46 |
| Blue, Prussian | .32 | @36 |
| Blue, Ultramarine | .13 | @16 |
| Brown, Vandyke | .11 | @14 |
| Green, Chrome | .12 | @16 |
| Green, Paris | | @24 |
| Sienna, Raw | .12 | @15 |
| Sienna, Burnt | .12 | @15 |
| Umber, Raw | .11 | @14 |
| Umber, Burnt | .11 | @14 |

### White Lead, Zinc, &c.—

| | ℔ lb | |
|---|---|---|
| Lead, English white, in Oil | | 9½@ 9¾ |
| Lead, American white, in Oil: | | |
| Lots of 500 lb or over | | @ 7¼ |
| Lots less than 500 lb | | @ 7¾ |
| In Barrels | | @ 6¾ |
| Lead, White, in oil, 25 lb tin pails, add to keg price | | @ ½ |
| Lead, White, in oil, 12½ lb tin pails, add to keg price | | @ 1 |
| Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price | | @ 1½ |
| Lead, American, Terms: For lots 12 tons and over ¼ ¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net. | | |
| Lead, White, Dry, in bbls | | 6½@ 6¾ |
| Zinc, American, dry | | 5⅝@ 5½ |
| Zinc, French: | | |
| Antwerp, Red Seal, dry | | 8¾ |
| Antwerp, Green Seal, dry | | 10¾ |
| Paris, Red Seal, dry | | 9¼ |
| Paris, Green Seal, dry | | 11 |
| Zinc, V. M. French, in Poppy Oil: | | |
| Green Seal: | | |
| Lots of 1 ton and over | | 13½@13⅝ |
| Lots of less than 1 ton | | 13⅝@13⅞ |
| Zinc, V. M. French, in Poppy Oil: | | |
| Red Seal: | | |
| Lots of 1 ton and over | | 11¾@12¾ |
| Lots of less than 1 ton | | 12¾@12⅝ |

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%; 25 bbls., 2%; 50 bbls., 4%.

### Dry Colors—℔ lb

| | | |
|---|---|---|
| Black, Carbon | .5 | @10 |
| Black Drop, American | .4 | @ 6 |
| Black Drop, English | .5 | @15 |
| Black, Ivory | .16 | @20 |
| Lamp, Coma | | 4½@ 6 |
| Blue, Celestial | .4 | @ 6 |
| Blue, Chinese | .29 | @32 |
| Blue, Prussian | .27 | @30 |
| Blue, Ultramarine | | 4½@15 |
| Brown, Spanish | | ½@ 1 |
| Carmine, No. 40 | $3.00 | @3.10 |
| Green, Chrome, ordinary | | 3½@ 6 |
| Green, Chrome, pure | .17 | @25 |
| Lead, Red, bbls., ½ bbls. and kegs: | | |
| Lots 500 lb or over | | @ 7¼ |
| Lots less than 500 lb | | @ 7¾ |
| Litharge, American, bbls | | @ 7¼ |
| Ocher, American | ℔ ton | $8.50@16.00 |
| American Golden | | 2½@ 3½ |
| French | | 1¼@ 2½ |
| Foreign Golden | .3 | @ 4 |
| Orange Mineral, English | .10 | @12 |
| French | .10¾ | @12 |
| German | | 8½@10 |
| American | | 6½@ 8¾ |
| Red, Indian, English | | 4½@ 8½ |
| American | .2 | @ 3¼ |
| Red, Turkey, English | .4 | @10 |
| Red, Tuscan, English | .7 | @10 |
| Red, Venetian, Amer. | ℔ 100 lb | $0.50@1.25 |
| English | 100 lb | $1.15@1.75 |
| Sienna, Italian, Burnt and Powdered | .3 | @ 9½ |
| Italian, Raw, Powdered | .3 | @ 6½ |
| American, Raw | | 1½@ 2 |
| American Burnt and Pow | | 1½@ 2 |
| Talc, French | ℔ ton | $17.00@25.00 |
| American | ℔ ton | 17.00@25.00 |
| Terra Alba, French | ℔ 100 lb | .90@ 1.00 |
| English | ℔ 100 lb | .80@ 1.00 |
| American | ℔ 100 lb, No. 1 | .75@ .80 |
| American | ℔ 100 lb, No. 2 | .60@ .65 |
| Umber, Turkey, Bnt. & Pow | | 2½@ 3¼ |
| Turkey, Raw and Powdered | | 2½@ 3½ |
| Burnt, American | | 1½@ 2 |
| Raw, American | | 1½@ 2 |
| Yellow Chrome | .12 | @14 |
| Vermilion, American Lead | .10 | @25 |
| Quicksilver, bulk | .65 | @.. |
| Quicksilver, bags | | @68 |
| English, Import | .65 | @70 |
| Chinese | .90 | @1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1906, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Domestic, ₱ doz. $3.00.....33⅓%
North's .....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

## Ammunition— See *Caps, Cartridges, Shells, &c.*

## Anvils—American—

Eagle Anvils.....₱ lb 7 @7¼¢
Hay-Budden, Wrought.....9¼@9¾¢
Trenton .....₱ lb 9¼@9¾¢

### Imported—

Peter Wright & Sons, ₱ lb, 84 to 349 lb. 11¢; 350 to 600 lb, 11½¢.

## Anvil, Vise and Drill—

Millers Falls Co., $18.00.....15&10%

## Apple Parers— See *Parers, Apple, &c.*

## Aprons, Blacksmiths'—

Livingston Nail Co.....33⅓%

## Augers and Bits—

*Com. Double Spur.....75@75&5%*
*Jennings' Patn., reg. finish.... 50&10@60%*
*Black Lip or Blued.....60&10%*
*Boring Mach. Augers.....70&10%*
*Car Bits, 12-in. twist.....50&10%*
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&20&7½%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ₱ doz. $26; No. 2, $18.....60&10&10%
Ford's, Clark's Pattern.....60%
C. E. Jennings & Co., Steer's Pat..25%
Swan's .....60%

### Gimlet Bits—

*Per gro.*
*Common Dble. Cut....$3.00@3.25*
*German Pattern. Nos. 1 to 10, $4.60; 11 to 13, $5.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames .....25&10%
Universal .....20%
Wood's Universal.....25%

### Ship Augers and Bits—

*Ship Augers.....45&5@—%*
Ford's .....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's .....15%
Watrous' .....33⅓&7½%
Snell's .....40%

## Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—

*Brad Awls:*
*Handled .....gro. $2.75@3.00*
*Unhdled, Shldered...gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. $1@$1.4*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket..gro.$11.50@12.00*

## Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*Single Bit, base weights:*
*First Quality.....$4.75@5.00*
*Second Quality.....$4.25@4.50*
*Double Bit, base weights:*
*First Quality.....$7.00@7.50*
*Second Quality.....$6.50@6.75*

## Axle Grease — See *Grease, Axle*

### Axles— Iron or Steel

*Concord, Loose Collar...4¼@4¾¢*
*Concord, Solid Collar...4¾@5¼¢*
*No. 1 Common, Loose...3¼@3¾¢*
*No. 1½ Com., New Style3¾@4¼¢*
*No. 2 Solid Collar.....4@4½¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12....75@75&5%*
*Nos. 13 to 14.....70&10@75&5%*
*Nos. 15 to 18...75&10@75&10&5%*
*Nos. 19 to 22...75&10@75&10&5%*

### Boxes, Axle—

*Common and Concord, not turned lb., 4½@5¢*
*Common and Concord, turned. lb., 5½@6¢*
*Half Patent.....lb., 8½@9¢*

## Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

### Balances— Sash—

Caldwell new list.....50%
Pullman .....50&10@60%

### Spring—

*Spring Balances.....50&10@60%*
Chatillon's:
Light Spg. Balances.....50&10%
Straight Balances.....40@50%
Circular Balances.....50&10%
Large Dial.....30%

## Barb Wire—See *Wire, Barb.*

### Bars— Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 3¼@3½¢*

### Towel

No. 10 Ideal, Nickel Plate..₱ gro. $8.50

### Beams, Scale—

*Scale Beams.....40&10@50%*
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ₱ doz. $0.85; Tinned .....$1.00
No. 11 Wire Coppered ₱ doz. $1.10; Tinned .....$1.20
No. 10 Wire Galvanized..₱ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....₱ gro. $7.80
No. 2 Buffalo.....₱ gro. $9.00
No. 3 Perfection Dust.....₱ gro. $8.00

### Egg—

Holt-Lyon Co.:
Holt, per doz., No. 1, Jap'd, $1.20; No. 1, Tin'd, $1.50; No. B, Jap'd, $2.00; No. 2, Tin'd, $2.25.
Lyon, Jap'd, per doz., No. 2, $1.25; No. 3, $1.50.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover.....$6.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (R. M. Co.)..₱ gro. net, $6.00

### Bellows—

*Blacksmith, Standard List.. 60&10@60&10&5%*

### Hand—

| *Inch..* | *6* | *7* | *8* | *9* | *10* |
|---|---|---|---|---|---|
| *Doz...* | *$4.75* | *5.70* | *6.65* | *7.60* | *8.55* |

### Molders—

| *Inch..* | *9* | *10* | *11* | *12* | *14* |
|---|---|---|---|---|---|
| *Doz...* | *$8.00* | *9.00* | *10.50* | *12.50* | *14.50* |

*Net Prices.*

### Bells— Cow—

*Ordinary Goods...75&5@75&10&5%*
*High grade.....70&10@75%*
Jersey .....75&10%
Texas Star.....50%

### Door—

Abbe's Gong.....45%
Barton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

### Hand—

*Hand Bells, Polished, Brass.60&10%*
*White Metal.....60%*
*Nickel Plated.....50&10@60%*
*Swiss .....60@60&7½%*
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

### Miscellaneous—

*Farm Bells.....lb. 2¼¢*
*Church and School...50&10@60%*
American Tube & Stamping Co. Gongs .....75%
Fable Call Bells.....50@50&10%

### Belting— Leather—

*Extra Heavy, Short Lap..60&5%*
*Regular Short Lap....60&10&5%*
*Standard .....70%*
*Light Standard.....70&5%*
*Cut Leather Lacing.....50%*
*Leather Lacing Sides, per sq. ft. 25¢*

### Rubber—

*Agricultural (Low Grade).... 75@75&5%*
*Common Standard....70@70&10%*
*Stanuard .....60&5@60&10%*
*Extra .....60@60&5%*
*High Grade.....50&5@50&10%*

### Bench Stops—

See *Stops, Bench*

### Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $1.25; No. 2, $1.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters .....20%

### Bicycle Goods—

John S. Leng's Son & Co.'s 1906 list:
Chain, Parts, Spokes.....50%
Tubes .....60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks— Tackle—

*Common Wooden.....70&10@75%*
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior .....30%
Stowell's Novelty, Mal. Iron.....50%
Stowell's Loading.....50&10%
See also Machines, Hoisting.

### Boards, Stove—

*Zinc, Crystal, &c.....40%*
*Paper Embossed.....40&10%*

### Boards, Wash—

See *Washboards.*

### Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

### Bolts—

### Carriage, Machine, &c.—

*Common Carriage (cut thread): ⅝ × 6 and smaller.....75@—%*
*Larger and Longer..65&5@—%*
*Phila. Eagle $3.00 list May 24, '99 80%*
*Bolt Ends, list Feb. 14, '95.... 65&10@—%*
*Machine, ⅜ x 4 and smaller 75@—%*
*Machine, larger and longer.. 65&5@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knob:*

| *Inch.....* | *3* | *4* | *5* | *6* | *8* |
|---|---|---|---|---|---|
| *Per doz..* | *$1.20* | *.35* | *.45* | *.60* | *.80* |

*Cast Iron Spring Foot, Jap'd:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.20* | *1.50* | *2.25* |

*Cast Iron Chain, Flat, Japanned:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$1.00* | *1.40* | *1.85* |

*Cast Iron Flat Shutter, Jap'd., Brass Knobs:*

| *Inch.....* | *6* | *8* | *10* |
|---|---|---|---|
| *Per doz.....* | *$0.75* | *.95* | *1.25* |

*Wrought Barrel Japd..80@80&10%*
*Barrel Bronzed.....50@50&10%*
*Spring .....70&10@70&10&10%*
*Shutter .....50&5@50&10&5%*
*Square Neck.....75@75&10%*
*Square ...66⅔&10@66⅔&10&10%*
Ives' Patent Door.....50%

### Plow and Stove—

*Plow .....65&10@—%*
*Stove .....82½&10*

### Tire—

*Common Iron.....80%*
*Norway Iron.....80%*
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84....80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

### Borers, Tap—

*Borers Tap, Ring, with Handle:*

| *Inch.....* | *1¼* | *1½* | *1¾* | *2* |
|---|---|---|---|---|
| *Per doz...* | *$4.80* | *5.60* | *6.40* | *8.00* |
| *Inch .....* | *2¼* | | | *2½* |
| *Per doz.....* | *$8.65* | | | *11.50* |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65@$1.75; No. 3, $2.50 each...25%

### Boxes, Mitre—

C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection .....40%
Seavey .....33⅓%
Stanley R. & L. Co.: Nos. 240 to 460, 30%; Nos. 50 and 60.....35%

### Braces—

*Common Ball, American..$1.25@1.50*
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley, 35%; Victor.....45%

### Brackets—

*Wrought Steel...80&10@80&10&5%*
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf, 75%; Sink...50%
Western, W. G. Co., Wire.....60&10%

### Bright Wire Goods—

See *Wire and Wire Goods.*

### Broilers—

Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

### Buckets, Galvanized—

Price per dozen.

| *Quart.....* | *19* | *12* | *14* |
|---|---|---|---|
| *Water, Regular...* | *1.40* | *1.70* | *1 90* |
| *Water, Heavy...* | *3.40* | *3.70* | *3.80* |
| *Fire, Rd. Bottom..* | *2.30* | *2.55* | *2.95* |
| *Well .....* | *2.55* | *2.87* | *3.15* |

### Bucks, Saw—

Hoosier.....₱ gro. $36.00

## Bull Rings—See *Rings, Bull*

### Butts— Brass—

*Wrought, list, Sept., '96..15@—%*
Cast Brass, Tiebout's.....50%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint.....70&10@75%*
*Loose Pin.....70&10@75%*
*Mayer's Hinges.....70@70&5*
*Parliament Butts.....70@70&5*

### Wrought Steel—

| | *Discount.* |
|---|---|
| *Reversible and Broad* | *75&5%* |
| *Light Reversible, Light Narrow* | *75&10%* |
| *Loose Joint Narrow, L'ht* | |
| *Inside Blind, etc....* | *75%* |
| *Back Flaps, Table, Chest. .....* | *70&10%* |

*Extra, 10&10@—%*

## Cages, Bird—

Hendryx Brass: Series 3000, 5000, 1100, 5%; 1200, 33⅓%; 200, 300, 600, 900 .....40&10%
Hendryx Bronze: Series 700, 800.... 40&10%
Hendryx Enameled.....40&10%

## Calipers—See *Compasses.*

### Calks, Toe and Heel—

*Blunt, 1 prong....per lb., 4@4¼¢*
*Sharp, 1 prong...per lb., 4¼@4¾¢*
Burke's Blunt, 4@4¼¢; Sharp, 4½@4¾¢

Gautier, Blunt, 4@4¼¢; Sharp 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

### Can Openers—
See *Openers, Can.*

### Cans, Milk—

| | 5 | 8 | 10 gal. |
|---|---|---|---|
| Illinois Pattern | $1.35 | 1.85 | 2.05 each. |
| New York Pattern | 1.50 | 2.20 | 2.45 each. |
| Baltimore Pattern | 1.50 | 2.20 | 2.45 each. |
| Dubuque | 1.35 | 1.60 | 1.75 each. |

### Cans, Oil—
Buffalo Family Oil Cans:

| 3 | 5 | 10 gal. |
|---|---|---|
| $18.00 | 60.00 | 120.00 gro., net. |

### Caps, Percussion—
*Eley's E. B* ..... $2@55¢
*G. D* ..... per M 34@35¢
*F. L* ..... per M 40@42¢
*G. E* ..... per M 48@50¢
*Musket* ..... per M 62@63¢

### Primers—
*Berdan Primers, $2 per M* ... 30%
*B. L. Caps (Sturtevant Shells) $2 per M* ..... 30%
*All other primers per M.* $1.52@1.60

### Cartridges—
*Blank Cartridges:*
*32 C. F., $5.50* ..... 10&5%
*38 C. F., $7.00* ..... 10&5%
*22 cal. Rim, $1.50* ..... 10&5%
*32 cal. Rim, $2.75* ..... 10&5%
*B. B. Caps, Con. Ball, Swgd.* $1.90
*B. B. Caps, Round Ball* ... $1.49
*Central Fire* ..... 25%
*Target and Sporting Rifle* .. 15&5%
*Primed Shells and Bullets.* 15&10%
*Rim Fire, Sporting* ..... 50%
*Rim Fire, Military* ..... 15&5%

### Casters—
*Bed* ..... 70@70&10%
*Plate* ..... 60&10@60&10&5%
*Philadelphia* ..... 75@75&10%
Acme, Ball Bearing ..... 33⅓%
Boss ..... 70&10%
Boss Anti-Friction ..... 70&10%
Gem (Roller Bearing) ..... 80%
Martin's Patent (Phoenix) ..... 45%
Standard Ball Bearing ..... 45%
Tucker's Patent low list ..... 30%
Yale (Double Wheel) low list ..... 50%

### Cattle Leaders—
See *Leaders, Cattle.*

### Chain, Coil—
*American Coil, Straight Link:*

| 5-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | 9-16 |
|---|---|---|---|---|---|---|
| $3.70 | 5.90 | 4.95 | 4.20 | 4.05 | 3.95 | 3.90 |
| ⅝ | ¾ | ⅞ to 1 | | 1⅛ to 1¼ inch. | | |
| $3.85 | 3.70 | 3.65 | | 3.80 | | |

*German Coil* ..... 60&10&10@70%

### Halter—
*Halter Chains* ..... 60&5@60&10%
*German Pattern Halter Chains, list July 24, '97* ..... 60&10&10%
Covert Mfg. Co, Halter ..... 35&5%

### Cow Ties—
See *Halters and Ties.*

### Trace, Wagon, &c.—
*Traces, Western Standard: 100 pr.*
*6½—6-5, Str'ght, with ring* .$25.00
*6½—6-2, Str'ght, with ring* .$26.00
*6½—8-2, Str'ght, with ring* .$30.00
*6½—10-2, Str'ght, with ring* .$35.00

*NOTE—Add 2c per pair for Hooks. Twist Traces; add per pair for Nos. 2 and 3, 2c; No. 1, 3c; No. 0, 4c to price of Straight Link.*

*Eastern Standard Traces, Wagon Chain, &c* ..... 60&10%

### Miscellaneous—
*Jack Chain, list July 10, '93:*
*Iron* ..... 60&10%
*Brass* ..... 60&10%
*Safety Chain* ..... 70&10%
*Gal. Pump Chain* ..... lb. 4@4½%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
Am. Dog Leads and Kennel Chains, 40@40&5%
Niagara Dog Leads and Kennel Chains ..... 45@60&5%
Wire Goods Co.:
Dog Chain ..... 70&10%
Universal Dbl.-Jointed Chain ..... 50%

### Chain and Ribbon, Sash—
Oneida Community:
Copper Chain, 60&5%; Steel Chain, 60%
Pullman:
Bronze Chain, 60%; Steel Chain, 60&10%
Sash Chain Attachments, per set .8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $1.25@$3.00
Sash Ribbon Attachments, per set .8¢

### Chalk—(From Jobbers.)
*Carpenters' Blue* .... gro., 40@—¢
*Carpenters' Red* .... gro., 35@—¢
*Carpenters' White* ... gro., 30@—¢
See also Crayons.

### Checks, Door—
Bardsley's ..... 45%
Pullman, per gro. ..... $54.00
Russwin ..... 40%

### Chests, Tool—
American Tool Chest Co.:
Boys' Chests, with Tools ..... 55%
Youths' Chests, with Tools ..... 40%
Gentlemen's Chests, with Tools .. 30%
Farmers', Carpenters,' etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty ..... 50%
Tool Cabinets ..... 50%
C. E. Jennings & Co.'s Machinists' Tool Chests ..... 33⅓&10%

### Chisels—
**Socket Framing and Firmer**
*Standard List* .. 75&10@75&10&5%
Buck Bros. ..... 30%
Charles Buck Edge Tool Co. ..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10 ..... 60%
Socket Framing No. 15 ..... 60%
Swan's ..... 75%
L. & I. J. White Co. ..... 30@30&5%

### Tanged—
*Tanged Firmers* ..... 33 1-3@40%
Buck Bros. ..... 30%
Charles Buck Edge Tool Co. ..... 30%
C. E. Jennings & Co. Nos. 191, 181 .. 25%
L. & I. J. White Co. ..... 25&5%

### Cold—
*Cold Chisels, good quality* .. 13@15¢
*Cold Chisels, fair quality* .. 11@12¢
*Cold Chisels, ordinary* ... 9@10¢

### Chucks—
Almond Drill Chucks ..... 35%
Almond Turret Six-Tool Chuck .... 35%
Beach Pat., each $8.00 ..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks ..... 35%
Pratt's Positive Drive ..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks .... 40&10%
Universal, Reversible Jaws ..... 40%
Combination, Reversible Jaws .... 40%
Drill Chucks, New Model, 25%; Standard, 40&10%; Skinner Pat., 25%; Positive Drive ..... 33⅓%
Planer Chucks ..... 30%
Face Plate Jaws ..... 40&10%
Standard Tool Co.:
Improved Drill Chuck ..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21 ..... 35%
Scroll Combination, Nos. 82 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35 .. 35%
Independent Iron, Nos. 18 and 318. 40%
Independent Steel, No. 64 ..... 30%
Union Czar Drill, Nos. 000, 101, 103 ..... 35%
Universal 11, 12, 16, 17, 13, 14, 15 .. 40%
Universal, No. 42 ..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50 ..... 40%
Steel Face Plate Jaws, Nos. 70 and 72 ..... 35%
Westcott Patent Chucks:
Lathe Chucks ..... 60%
Little Giant Auxiliary Drill ..... 60%
Little Giant Double Grip Drill .. 50%
Little Giant Drill, Improved ..... 50%
Oneida Drill ..... 50%
Scroll Combination Lathe ..... 50%

### Clamps—
Adjustable, Hammers' ..... 20@20&5%
Carriage Makers', P., S. & W. Co. ..... 40&10&50%
Besly, Parallel ..... 33⅓&10%
Lineman's, Utica Drop Forge & Tool Co. ..... 40%
Wood Workers, Hammers' ..... 40&10%
Saw Clamps, see Vises, Saw Filers'.

### Cleaners, Drain—
Iwan's Champion, Adjustable ..... 55%
Iwan's Champion, Stationary ..... 45%

### Sidewalk—
Star Socket, All Steel .. ℔ doz. $4.05 net
Star Shank, All Steel .. ℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7⅛ in., $3.00; 8 in., $3.25.

### Cleavers, Butchers'—
Foster Bros. ..... 30%
Fayette R. Plumb ..... 30%
L. & I. J. White Co. ..... 30%

### Clippers, Horse and Sheep—
Chicago Flexible Shaft Company:
'98 Chicago Horse, each .... $8.75
1902 Chicago Horse, each .. 10.75
20th Century Horse, each .. 5.00
Lightning Belt Horse, each. 15.00
Chicago Belt Horse, each. 20.00
Stewart's Enclosed Gear Horse, each ..... $6.75
Stewart's Patent Sheep Shearing Machine, each ..... $12.75
} 20%

### Clips, Axle—
*Regular Styles, list July 1, '05* 80%

### Cloth and Netting, Wire—See *Wire, &c.*

### Cocks, Brass—
*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c* ..... 70%
*Compression Bibbs* ..... 65&10%

### Coffee Mills—
See *Mills, Coffee.*

### Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list ..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

### Combs, Curry—
Metal Stamping Co. ..... 40%

### Compasses, Dividers, &c.
*Ordinary Goods* ..... 70&10@75%
Bemis & Call Hdw. & Tool Co.:
Dividers ..... 65%
Calipers, Double, 65%; Inside or Outside ..... 65%
Calipers, Wing ..... 60%
Compasses ..... 50%
Wm. Schollhorn Co.:
Excelsior Dividers ..... 60%
Lodi Dividers ..... 75%

### Conductor Pipe,—
*L. C. L. to Dealers:*

| *Territory:* | *Galvanized* | | |
|---|---|---|---|
| | *Galv. Steel.* | *Charcoal Iron.* | *Copper. 14, 16&20 oz.* |
| *Eastern:* | | | |
| | 60&30% | 60&2½% | 40&10% |
| *Central:* | | | |
| | 70% | 55&7½% | 40&7½% |
| *Western and Southern:* | | | |
| | 65&10% | 55&2½% | 40&5% |
| *So. Western* | | | |
| | 62½&7½% | 50&5% | 40&2½% |

*Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

### Coolers, Water—

| Gal, each.. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Labrador | $1.20 | $1.50 | $1.80 | $2.10 | $2.70 |
| Gal. | 3 | 4 | 6 | 8 | |
| Iceland, ea. | $1.80 | $2.10 | $2.40 | $3.00 | |
| Gal. | 2 | 3 | 4 | 6 | 8 |
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |
| Galvanized, Lined, side handles, Gal. | 2 | 3 | 4 | 6 | 8 |
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |
| White Enameled, 25%; Agate Lined, 25% | | | | | |

### Coopers' Tools—
See *Tools, Coopers'.*

### Coppers' Soldering—
*Soldering Coppers, 3 lbs. to pair and heavier, 25@24¢; lighter than 3 lbs. to pair* ..... 25@26¢

### Cord—Sash—
*Braided, Drab* ..... lb. 35¢
*Braided, White, Com., Nos. 8 to 12, 24¢; No. 7, 24½¢; No. 6, 25½¢.*
*Cable Laid Italian* ..... lb., *A, 18¢; B, 16¢*
*Common India* ..... lb. 10@10½¢
*Cotton Sash Cord, Tw'ted* .. 17@19¢
*Patent Russia* ..... lb. ..@11¢
*Cable Laid Russia* .... lb. ..@15¢
*India Hemp, Braided* .. lb. ..@18¢
*India Hemp, Twisted* .. lb. 12@13¢
*Patent India, Twisted* .. lb. 12@13¢
Anniston Cordage Co.: ℔ lb, solid Braided, Nos. 8 to 12, $0.24; No. 7, $0.24½; No. 6, $0.25½; ℔ doz., 50 ft.: Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ℔ lb, 25½¢; No. 7, 25¢; Nos. 8 to 12, 24½¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10 ..... ℔ lb 23 ¢
Pullman:
Wire Sash Cord ..... 10%
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:
Braided, per lb., Drab Cotton, 40¢; Italian Hemp, 40¢; Linen, 55¢; White Cotton or Spot .... 35 ¢
Massachusetts, White ..... ℔ lb 30 ¢
Massachusetts, Drab ..... ℔ lb 25 ¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen .... 57½¢
See also Chain and Ribbon.

### Wire, Picture—
*List July 10, 1906* ... 85&10&10@—
Hendryx Standard Wire Picture Cord, old list, 85&10%

### Cradles—
*Grain* ..... 40&12½%

### Crayons—
*White Round Crayons, Cases, 100 gro., $6.50@$7.50 at factory, but lower prices made by jobbers*
Zelnicker's Lumber:
White and Purple, Indelible, ℔ gro. $7.50
Red, Blue, Green, Yellow and Terra Cotta ..... ℔ gro. $6.50
Black ..... ℔ gro. $4.00
See also Chalk.

### Crooks, Shepherds'—
Fort Madison, per doz., Heavy, $7.00; Light ..... $6.50

### Crow Bars—See *Bars, Crow.*

### Cultivators—
Victor Garden ..... 50%

### Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847, ℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor ..... ℔ doz. $3.00
Wm. Rogers & Son ..... ℔ doz. $2.50

### Cutters—Glass—
H. H. Mayhew Co. ..... 40%
Red Devil ..... 50%
Smith & Hemenway Co. ..... 50%
Woodward ..... 40%

### Meat and Food—
American ..... 30%

| Nos. | 1 | 2 | 3 | 4 | B | 5 |
|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 |
|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $1.50 | $6 25&25&7½% |
| No. 202, $1.50 ..... 40&7½% | | | | | |

Dixon's ..... ℔ doz. 40&50%

| Nos. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal ..... 40&10&50%
Little Giant ..... ℔ doz. 40@50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

N. E. Food Choppers ..... 25%
New Triumph No. 665, ℔ doz. $24.00.. 40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%
Woodruff's ..... ℔ doz. 40@50%

| Nos. | 100 | 150 |
|---|---|---|
| | $15.00 | $18.00 |

Enterprise Beef Shavers ..... 25@30%

### Slaw and Kraut—
Henry Disston & Sons:
Slaw and Kraut Cutters, Corn Graters, &c. ..... 35%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife .... ℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters ..... 40%
Slaw Cutters, 1 Knife .. ℔ gr. $18@$20
Slaw Cutters, 2 Knife .. ℔ gr. $22@$30

### Tobacco—
*All Iron, Cheap* .. doz. $1.25@$1.50
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c.—
Dalbey Post Hole Auger .. per doz., $9.00
Disston's:
Rapid, ℔ doz., $24.00 ..... 25%
Samson, ℔ doz., $34.00 ..... 25%
Iwan's Imp'ved Post Hole Auger. 40&5%
Vaughan Pattern Post Hole Augers, ℔ doz., $6.25
Perfection Post Hole Diggers, ℔ doz. ..... $8.25
Split Handle Post Hole Diggers, ℔ doz. $7.25
Kohler's, ℔ doz., Universal, $14.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.00; Pioneer ..... $7.00
Never-Break Post Hole Diggers, ℔ doz., $24.00 ..... 60%

### Dividers—See *Compasses.*

### Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ℔ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

### Drawing Knives—
See *Knives, Drawing.*

### Dressers, Emery Wheel—
Diamond Emery Wheel Dressers .... 35%
Diamond Wheel Dresser Cutters .... 35%

### Drills and Drill Stocks—
*Common Blacksmiths' Drill, each* ..... $1.50@$1.75
Breast, Millers Falls ..... 15&10%
Breast, P., S. & W. ..... 40%
Goodell Automatic Drills .. 40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3 ..... 16⅔%
Johnson's Drill Points ..... 16⅔%
Millers Falls Automatic Drills. 33⅓&10%
Ratchet, Curtis & Curtis ..... 25%
Ratchet, Parker's, 40%; Weston's .. 40%
Ratchet, Weston's, Style H Improved ..... 40%
Ratchet, No. 012 ..... 40%
Ratchet, Whitney's, P., S. & W. .. 50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00 ..... 33⅓%

### Twist Drills—
*Bit Stock* ..... 60&10&10@70%
*Taper and Straight Shank* .... 60&10@60&10&5%

### Drivers, Screw—
*Screw D'ver Bits, per doz.* .45@50¢
Balsey's Screw Holder and Driver, ℔ doz., 2¼-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits ..... 30
Champion ..... 50%
Disston's ..... 70%
Edson ..... 60%
Fray's Hol. H'dle Sets, No. 3, $12 .. 50%
Ford's Brace Screw Drivers .... 40&10%
Gay's Double Action Ratchet ..... 35%
Goodell's Auto .. 50&10&10@50&10&10&5%
Hurwood ..... 40%
Mayhew's Black Handle ..... 40%
Mayhew's Monarch ..... 40&10%
Millers Falls, Nos. 20 and 21 .. 25&10%
Millers Falls, Nos. 11, 12, 41, 42 .. 15&10%
New England Specialty Co. ..... 50&10%
Smith & Hemenway Co. ..... 40&5%
H. D. Smith & Co.'s Perfect H'dle. 40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles, 65%; No. 86, 75%; Victor, 55%; Defiance .. 70%
Swan's:
Nos. 7565 to 7568, 50%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| *Territory.* | *L. C. L. Galvanized* | |
|---|---|---|
| | *Galv. Steel.* | *Charcoal Iron.* | *Copper. 14, 16&20 oz.* |
| *Eastern:* | | | |
| | 80% | 70&5% | 40&10% |
| *Central:* | | | |
| | 75&10&7½% | 70% | 40&7½% |
| *Western and Southern:* | | | |
| | 70&20&7½% | 60&15&2½% | 40&5% |
| *So. Western:* | | | |
| | 70&20% | 65&2½% | 40&2½% |

*Terms.—2% for cash. Factory shipments generally delivered.*
See also Conductor Pipe and Elbows.

### Elbows and Shoes—
*Factory shipments, all territories:*
*Galv. Steel and Galv. C. I. Standard Gauge* ..... 60&10%
*No. 26* ..... 50%
*No. 24* ..... 25%
*No. 22* ..... 10%
*Copper* ..... 50%

### Elbows, Stove Pipe—
Dover, one piece (R. M. Co.) .... 40&10%
Perfect Elbows ..... 40%

### Emery, Turkish—

| | ¼ to 46: | 5½ to 220: | Flour. |
|---|---|---|---|
| *Kegs* ..... lb. | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs* ..... lb. | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs* ..... lb. | 5½¢ | 6 ¢ | 4 ¢ |
| *10-lb. cans, 10 in case* .... | 6½¢ | 7 ¢ | 6 ¢ |
| *10-lb. cans, less than 10* ..... | 10 ¢ | 10 ¢ | 8 ¢ |
| *Less quantity* .. | 10 ¢ | 10 ¢ | 8 ¢ |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

### Extractors, Lemon Juice

—See *Squeezers, Lemon.*

### Fasteners, Blind—

Zimmerman's ..... 50&10%
Walling's ..... 40&10%

### Cord and Weight—

Ives ..... 33⅓%

### Faucets—

*Cork Lined* ..... *50@50&10%*
*Metallic Key, Leather Lined* .. *60&10@70%*
*Red Cedar* ..... *40&10@50%*
*Petroleum* ..... *70&10@75%*
B. & L. B. Co.:
Metal Key ..... 60&10%
Star ..... 60%
West Lock ..... 50&10%
John Sommer's Peerless Tin Key ..... 40%
John Sommer's Boss Tin Key ..... 50%
John Sommer's Victor Mtl. Key ..... 50&10%
John Sommer's Duplex Metal Key ..... 60%
John Sommer's Diamond Lock ..... 40%
John Sommer's I. X. L. Cork Lined ..... 50%
John Sommer's Reliable Cork Lined ..... 50&10%
John Sommer's Chicago Cork Lined ..... 60%
John Sommer's O. K. Cork Lined ..... 50%
John Sommer's No Brand, Cedar ..... 50%
John Sommer's Perfection, Cedar ..... 40%
McKenna, Brass:
Burglar Proof, N. P. ..... 25%
Improved, ⅜ and ½ inch ..... 25%
Self Measuring:
Enterprise, ℔ doz. $36.00 ..... 40&10%
Lane's, ℔ doz. $36.00 ..... 40&10%
National Measuring, ℔ doz. $36.40 ..... 40&10%

### Felloe Plates—

See *Plates, Felloe.*

### Files— Domestic—

*List revised Nov. 1, 1899.*
*Best Brands* ..... *70&10@75&10%*
*Standard Brands* ..... *75&10@75&10&10%*
*Lower Grade* ..... *75&10&10@80&10%*

### Imported—

*Stubs' Tapers, Stubs' list, July 24, '97* ..... *33 1-3@40%*

### Fixtures, Fire Door—

Richards Mfg. Co.:
Universal, No. 103; Special, No. 104 ..... $3.75
Fusible Links, No. 96 ..... 50%
Expansion Bolts, No. 107 ..... 60&10%

### Grindstone—

*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.25* | *3.75* | *4.25* | *4.75* |

P., S. & W. Co. ..... 30&10@40%
Reading Hardware Co. ..... 60%
Stowell's Giant Grindstone Hanger, ℔ doz. $6.00 ..... 50%
Stowell's Grindstone Fixtures, Extra Heavy. 50&10&10%; Light ..... 60&10%

### Fodder Squeezers—

See *Compressors.*

### Forks—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Iowa Dig-Em Potato ..... 60&10%
Victor, Hay ..... 60&15&2½%
Victor, Manure ..... 66⅔%
Victor, Header ..... 66⅔%
Champion, Hay ..... 66⅔%
Champion, Header ..... 65%
Champion, Manure ..... 60&15&2½%
Columbia, Hay ..... 60&20%
Columbia, Manure ..... 70%
Columbia, Spading ..... 70&12½%
Hawkeye Wood Barley ..... 40%
W. & C. Potato Digger ..... 60&10%
Acme Hay ..... 60&20%
Acme Manure, 4 tine ..... 60&10&5%
Dakota Header ..... 60&20%
Jackson Steel Barley ..... 60&20%
Kansas Header ..... 60%
W. & C. Favorite Wood Barley ..... 40%
Plated.—See Spoons.

### Frames— Saw—

*White, S'g't Bar, per doz.* *75@80¢*
*Red, S'g't Bar, per doz.* *$1.00@1.25*
*Red, Dbl. Brace, per doz.* *$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.30* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse—

| | *Per 1000 Feet.* | |
|---|---|---|
| *Hemp* | *$2.75* | *10&2½%* |
| *Cotton* | *3.20* | |
| *Waterproof Sgl. Taped* | *3.65* | |
| *Waterproof Dbl. Taped* | *4.40* | |
| *Waterproof Tpl. Taped* | *5.15* | |

### Gates, Molasses and Oil—

*Stebbins' Pattern* ..... *80&10%*

### Gauges—

*Marking, Mortise, &c.* *50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c. ..... 50&50&10%
Scholl's Patent ..... 50&10@50&10&10%
Door Hangers ..... 50@50&10%
Disston's Marking, Mortise, &c. ..... 67½%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 38%
Marking and Mortise ..... 60%
Wire, Brown & Sharpe's ..... 25%
Wire, Morse's ..... 25%
Wire, P., S. & W. Co. ..... 37½%

### Gimlets— Single Cut—

*Numbered assortments, per gro.*
*Nail, Metal, No. 1,* *$2.00*; *2,* *$2.30*
*Spike, Metal, No. 1,* *$4.00*; *2,* *$4.30*
*Nail, Wood Handled, No. 1,* *$2.30*; *2,* *$2.60*
*Spike, Wood Handled, No. 1,* *$4.50*; *2,* *$4.60*

### Glass, American Window

See *Trade Report.*

### Glasses, Level—

Chapin-Stephens Co. ..... 60@60&10%

### Glue, Liquid Fish—

*Bottles or Cans, with Brush* .. *25&10@50%*
International Glue Co. (Martin's) .. 40%

### Grease, Axle—

*Common Grade* ..... *gro. $4.50@6.00*
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb. $1.20; 2 lb. ..... $2.00
Helmet Hard Oil ..... 25%

### Griddles, Soapstone—

Pike Mfg. Co. ..... 33⅓@33⅓&10%

### Grindstones—

Bicycle Emery Grinder ..... $6.50
Bicycle Grindstones, each ..... $2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz. ..... $2.00 } 25
Pike Mower and Tool Grinder, each ..... $6.00 } 33⅓

### Grips, Nipple—

Perfect Nipple Grips ..... 40&10&2%

### Halters and Ties—

*Cow Ties* ..... *60&10@60&10&5%*
Covert Mfg. Co.:
Web ..... 45%
Jute Rope ..... 45%
Sisal Rope ..... 33⅓%
Cotton Rope ..... 45%
Hemp Rope ..... 45%
Oneida Community:
Am. Coil and Halters ..... 40@40&5%
Am. Cow Ties ..... 45@50%
Niagara Coil and Halters .. 45@50&5%
Niagara Cow Ties .. 45&5@50&10&5%

### Hammers—

### Handled Hammers—

Heller's Machinists' ... 40&10@40&10&10%
Heller's Farriers ..... 40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75 ..... 50%
Peck, Stow & Wilcox, Steel ..... 50%
Fayette R. Plumb:
Plumb, A. E. Nail ..... 33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand ..... 50&7½&5@50&10&7½&5%
Machinists' Hammers .. 50&5@50&10&5%
Riveting and Tinners' ..... 40&2½@40&10&2½%

### Heavy Hammers and Sledges—

*Under 3 lb., per lb.,* *50¢* .. *80&10%*
*3 to 5 lb., per lb.,* *40¢* ..... *80&10%*
*Over 5 lb., per lb.,* *30¢* .. *80&10&10%*
*Wilkinson's Smiths'* ... lb. *9½@10¢*

### Handles—

### Agricultural Tool Handles

*Axe, Pick, &c.* .... *60&10@60&10&5%*
*Hoe, Rake, &c.* ..... *45@50%*
*Fork, Shovel, Spade, &c.:*
*Long Handles* ..... *45@50%*
*D Handles* ..... *50@50&5%*

### Cross-Cut Saw Handles—

Atkins' ..... 40%
Champion ..... 50%
Disston's ..... 50%

### Mechanics' Tool Handles—

*Auger, assorted* ... *gro. $2.50@$3.00*
*Brad Awl* ..... *gro. $1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple,* *$2.40@$2.65*; *Hickory* ..... *$2.15@2.40*
*Socket Firming, Apple,* *$1.75@$1.95*; *Hickory* ..... *$1.45@$1.60*
*Socket Framing, Hickory,* *$1.60@$1.75*
*File, assorted* ..... *gro. $1.30@$1.40*
*Hammer, Hatchet, &c.* *60&10@60&10&5%*
*Hand Saw, Varnished, doz. 80&85¢; Not Varnished* ... *65@75¢*
*Plane Handles:*
*Jack, doz. 30¢; Jack, Bolted.* *75¢*
*Fore, doz. 45¢; Fore, Bolted.* *90¢*
Chapin-Stephens Co.:
Carving Tool ..... 40@40&10%
Chisel ..... 65@65&10%
File and Awl ..... 65@65&10%
Saw and Plane ..... 40@40&10%
Screw Driver ..... 40@40&10%
Millers Falls Adj. and Ratchet Auger Handles ..... 15&10%
Nicholson Simplicity File Handle ..... ℔ gro. $0.85@$1.50

### Hangers—

*NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.*

Allith Mfg. Co.:
Reliable, No. 1; Allith, No. 3; Allith Adjustable, No. 6; Reliable Parlor Door ..... 50%
Chicago Spring Butt Co.:
Friction ..... 25%
Oscillating ..... 25%
Big Twin ..... 25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door ..... 50%
Elevator ..... 30%
Railroad ..... 50%
Cronk & Carrier Mfg. Co.:
Loose Axle ..... 60&10%
Roller Bearing ..... 70%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00 ..... 70%
Roller Bearing, No. 11, $15.00 .. 70%
Roller Bearing, Ex. Hy., No. 22, $18.00 ..... 70%
Hinged Hangers, $16.00 ..... 60&10%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion ..... $2.25
Barn Door, Standard ..... 60&5%
Hinged ..... net $6.40
Covered ..... 60&2%
Special ..... 70&5%
Lawrence Bros.:
Advance and Sterling ..... 60&10%
Cleveland and Peerless ..... 75%
Clipper, No. 75 ..... 60%
Crown ..... 60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25. Giant ..... 60&5%
Hummer ..... 70&5%
New York ..... 60&10%
McKinney Mfg. Co.:
No. 1, Special, $15 ..... 60&10%
No. 2, Standard, $18 ..... 60&10%
Hinged Hangers, $16 ..... 50%
Meyers' Stayon Hangers ..... 60&5%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, ..... 60&5%
Pioneer Wood Track No. 3 .. $2.00
Ball B'r'g St'l Track No. 10, 50&10%
Roller B'r'g St'l Track No. 12, $2.15
Roller B'r'g St'l Track No. 13, $2.30
Roller B'r'g, Nos. 39, 41, 43, ..... 70&10%
Hero, Adj. Track No. 19 .. 50&10%
Adjustable Track Tandem Trolley Track No. 16 ..... 50&10%
Seal, Steel Track No. 8 ..... $2.25
Auto Adj. Track No. 22 .. 50&10%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.10; No. 121, $2.25; No. 150 ..... $2.35
Safety Underwriters F. D. No. 101 ..... 50%
Tandem No. 44, 2½ and 3 .. 60&10%
Palace, Adjustable Track No. 132 ..... 50&10%
Royal, Adjustable Track No. 122 ..... 50&10%
Ives' Wood Track No. 1 ..... $2.00
Trolley B. D. No. 20 ..... 50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28 ..... $1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43; 44, Sizes 1 and 2 .. 70&10%
Anti-friction, No. 42; No. 44, sizes 2½ and 3 ..... 60&10%
Hinged Tandem No. 48 .... 60&5%
Folding Door B. B. Swivel No. 135 ..... 40%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing ..... 40%
Ajax Hinge Door ..... 60%
Apex Parlor Door ..... 50&10&5%
Atlas, 60%; Freight Car Door, 60%
Baggage Car Door ..... 50%
Climax Anti-Friction ..... 50&10%
Elevator ..... 40%
Express ..... 50%
Interstate ..... 60&10%
Lundy Parlor Door ..... 50&10%
Magic, 60%; Rex Hinge Door, 60%
Matchless ..... 60&10%
Nansen ..... 70&5%
Parlor Door, 50&10%; Railroad, ..... 60&10%
Street Car Door ..... 50%
Steel, Nos. 300, 401, 500 .... 50&10%
Underwriters' Fire Door ..... 40%
Wild West Warehouse Door .. 50%
Zenith for Wood Track .... 50&10%
A. L. Sweet Iron Works:
Check Back, 70%; Eagle ..... 70%
Climax Anti-Friction ..... 50&10%
Hylo Hinge, New Perfection, Pilot, Pilot Hinge ..... 60%
Rider Wooster ..... 65%
Western Pattern ..... 70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing .. 50&15&10&5%

Extra 10&10% often given.

### Hangers— Garment—

Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $3.00; 1 pair Round Nickeled, $3.00; 4 pair Round Nickeled, $27.00; 1 pair Flat Gun Metal, $12.00; 1 pair Flat Black Enameled, $7.50; 1 pair Wood Clamp, $13.00; Skirt Hangers, Folding, per gro., $21.00; Coat Hangers, Folding, per gro., $9.00; Garment Hanger Rods, Round Nickeled, per gro., $15.00; Garment Hanger Loops, Round Nickeled, per gro. ..... $15.00
Victor Folding ..... ℔ gro. $9.60
Western, W. G. Co. ..... 70&10%

### Gate—

Myers' Patent Gate Hangers, ℔ doz. net ..... $4.50

### Joist and Timber—

Lane Bros. Co. ..... 30%

### Hasps—

Griffin's Security Hasp ..... 50%
McKinney's Perfect Hasp, ℔ doz. .. 50%

### Hatchets—

*Regular list, first quality* .... *50%*
*Second quality $1.00 per doz. less than first quality.*

### Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 2E, $3.25; No. 1, $3.50 ..... 15%
Clark Coal, ℔ doz. $0.75 ..... 10%

### Hinges—

### Blind and Shutter Hinges—

*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Dixie, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50 ..... 10%
Charles Parker Co. ..... 70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges ..... 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00 ..... 20%
Reading's Gravity ..... 60%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter ..... 75&10&5%
Acme, Lull & Porter ..... 75&10%
Queen City Reversible ..... 75&10%
Shepard's Noiseless, Nos. 60, 65, 55 ..... 75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5 ..... 75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5 ..... 75&10&5%
Tip Pat'n, Nos. 1, 3 & 5 ..... 75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5 ..... 75&10&5%
Shepard's Double Locking, Nos. 20 & 25 ..... 70%
Champion Gravity Locking, No. 75 .. 75%
Steamboat Gravity Locking, No. 10 .. 75%
Pioneer, Nos. 060, 45 & 5½ ..... 75%
Empire, Nos. 101 & 103 ..... 70%
W. H. Co.'s Mortise Gravity Locking, No. 2 ..... 60%

### Gate Hinges—

*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.40* | *2.05* | *3.80* |
| *Latches only* | *.70* | *.70* | *.35* |

*New England:*
*With Latch* ..... *doz.* ... *@$2.00*
*Without Latch* ..... *doz.* ... *@$1.60*
*Reversible Self-Closing:*
*With Latch* ..... *doz.* ... *@$1.75*
*Without Latch* ..... *doz.* ... *@$1.35*
*Western:*
*With Latch* ..... *doz. $1.75*
*Without Latch* ..... *doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

| Nos. | 1 | 2 | 3 |
|---|---|---|---|
| Hinges with Latches | $2.00 | 2.70 | 5.00 |
| Hinges only | 1.40 | 2.05 | 3.80 |
| Latches only | .70 | .70 | 1.35 |

### Pivot Hinges

Bommer Bros. Pivot ..... 40%
Lawson Mfg. Co. Matchless ..... 45%

### Spring Hinges—

*Holdback, Cast Iron* ... *$6.50@$7.00*
*Non-Holdback, Cast Iron* *$6.25@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges ..... 45%
Bardsley's Patent Checking .. 15%
Bommer Bros.:
Bommer Ball Bearing Floor .. 40%
Bommer Spring Hinges ..... 40%
No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges ..... 25%
Triple End Spring Hinges .... 50%
Chicago (Ball Bearing) Floor .. 50%
Garden City Eugine House .... 25%
Keene's Saloon Door ..... 25%
Columbian Hardware Co.:
Acme, Wrought Steel ..... 30%
Acme, Brass ..... 25%
American ..... 30%
Columbia, ℔ gr., No. 14, $9.00; No. 16, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Gem, new list ..... 30%
Clover Leaf ..... ℔ gr. $12.00
Oxford, new list ..... 30%
Floor Spring Hinges ..... 65&10%
Lawson Mfg. Co., Matchless .... 30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges ..... 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door ..... ℔ gr. $9.00
Ball Bearing Floor Hinge .... 50%
Ohio Detachable Screen Door Hinge ..... ℔ gr. $12.00
Superior Spring Hinge Co.:
Superior Floor Hinges ..... 33⅓%
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4 ..... ℔ gr. $9.00
New Idea, No. 1 ..... ℔ gr. $9.00
New Idea, Double Acting .... 45%
New Idea Floor ..... 45%
Van Wagoner:
Ball Bearing ..... 25%
No. 777 Sh't Steel Holdb'k, ℔ gro. pr. $9

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—

*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges* ... *65%*
*Heavy Strap Hinges* .. *75%*
*Light T Hinges* ..... *60%*
*Heavy T Hinges* ..... *55%*
*Extra H'y T Hinges* .. *70%*
*Hinge Hasps* ..... *45%*
*Cor. Heavy Strap* .... *75%*
*Cor. Ex. Heavy T* .. *70&10%*

*Extra, 10&5@10&10%*

*Screw Hook and Strap.* { *6 to 12 in.* ..lb. 3¾¢ ; *1½ to 20 in.* ..lb. 3½¢ ; *22 to 36 in.* ..lb. 3¼¢

*Screw Hook and Eye:*
*¾ to 1 inch*.....lb. 6½¢
*⅝-inch*.....lb. 7½¢
*½-inch*.....lb. 8½¢

### Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—
| | Per doz. | | | |
|---|---|---|---|---|
| *Inch* | 15 | 16 | 17 | 18 |
| *Galv. Open* | $2.50 | 2.75 | 3.00 | 3.25 |
| *Jap. Open* | $1.90 | 2.10 | 2.25 | 2.55 |
| *Galv. Funnel* | $3.00 | 3.30 | 3.60 | 3.90 |
| *Jap. Funnel* | $2.45 | 2.65 | 2.85 | 3.30 |

### Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

### Hoes— Eye—
*Scovil and Oval Pattern*.....60&10@60&10&10%
*Grub, list Feb. 23, 1899*.....70&10@75&10%
D. & H. Scovil.....30%

### Handled—
*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 66⅔%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe..₱ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱ doz. $4.85

### Hoisting Apparatus—
See *Machines, Hoisting.*

### Holders— Bit—
Angular, ₱ doz. $24.00.....45&10%

### Door—
Bardsley's.....45%
Empire.....50%
Pullman.....80%
Superior.....33⅓%

### File and Tool—
Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—
Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

### Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50%

### Hooks—Cast Iron—
Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

### Wire—
*Belt*.....80&10@..%
*Wire C. & H. Hooks:*.....75&10@75&10&10%
Columbian Hdw Co.; Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co. Molding.....75%
Wire Goods Co.:
Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—
*Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.*
*Cotton*.....doz. $1.05@1.25
Wrought Staples, Hooks, &c.—See Wrought Goods

### Miscellaneous—
*Hooks, Bench,* see *Stops, Bench.*
*Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25*
*Grass, best, all sizes, per doz.$1.60*
*Grass, common grades, all sizes, per doz*.....$1.30
*Whiffletree*.....lb. 5%@6¢
*Hooks and Eyes:*
*Brass*.....60&5@60&10&5%
*Malleable Iron*.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—
See *Nails, Horse.*

### Horseshoes—
See *Shoes, Horses.*

### Hose, Rubber—
*Garden Hose, ¾-inch:*
*Competition*.....ft. 5 @ 6 ¢
*3-ply Guaranteed*..ft. 8 @ 9 ¢
*4-ply Guaranteed*..ft. 10 @11 ¢
*Cotton Garden, ¾-in., coupled:*
*Low Grade*.....ft. 8 @ 9 ¢
*Fair Quality*.....ft. 10 @11 ¢

## Irons— Sad—
*From 1 to 10*.....lb. 3 @3¼¢
*B. B. Sad Irons*.....lb. 3¼@3½¢
*Mrs. Potts', cents per set:*
| Nos. | 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 63 | 62 | 75 | 72 |
| *Tin'd Tops* | 70 | 67 | 80 | 77 |

*New England Pressing*.lb. 3¾@4¢

### Pinking—
*Pinking Irons*.....doz. 60¢

### Irons, Soldering
See *Coppers.*

### Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

## Kettles—
*Brass, Spun, Plain*.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—
Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

### Corn—
Wilkinson Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—
*Standard List*.....75&5@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Swan's.....75%
Watrous.....16⅔%
L. & J. J. White.....20&5@25%

### Hay and Straw—
*Serrated Edge, per doz.$5.75@6.00*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Mincing—
Buffalo.....₱ gro. $13.00

### Miscellaneous—
*Farriers'*.....*doz. $3.00@3.25*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—
*Base, 2½-inch, Birch, or Maple, Rubber Tip*.....*gro.$1.25@1.50*
*Carriage, Jap., all sizes*.....*gro. 40@45¢*
*Door, Mineral*.....*doz. 65@70¢*
*Door, Por. Jap'd*.....*doz. 70@75¢*
*Door, Por. Nickel*..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

## Lacing, Leather—
See *Belting, Leather—*

### Ladders, Store, &c.—
Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 100.....50%

### Ladles, Melting—
L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%

### Lanterns—Tubular—
*Regular Tubular, No. 0*.....*doz.$4.25@4.50*
*Lift Tubular, No. 0*.....*doz.$4.75@5.00*
*Hinge Tubular, No. 0*.....*doz.$4.75@5.00*
*Other Styles*.....40@40&5%

### Bull's Eye Police—
*No. 1, 2¾-inch*.....*$2.75@3.00*
*No. 2, 3-inch*.....*$3.00@3.25*

### Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

### Latches— Thumb—
*Roggin's Latches, with screw*..*doz. 35@40¢*

### Door—
Allith Mfg. Co., Automatic, No. 400, ₱ doz.....$4.00
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.90
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50
Stowell's Steel.....50%

### Leaders, Cattle—
*Small*.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%; Sisal, 33⅓%.

### Lifters, Transom—
R. & E.....33⅓%

### Lines—
| *Wire Clothes, Nos.* | 18 | 19 | 20 |
|---|---|---|---|
| *100 feet* | $2.25 | 2.00 | 1.75 |
| *75 feet* | $1.75 | 1.35 | 1.10 |

Anniston Waterproof Clothes. 50 ft., ₱ gro., $25.00; Gilt Edge, $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $8.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

### Locks— Cabinet—
*Cabinet Locks*...33⅓@33⅓&7½%

### Door Locks, Latches, &c.—
*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%

### Elevator—
Stowell's.....50%

### Padlocks—
*Wrought Iron*....75&10&5@80&5%
*Net prices are general.*
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—
Ives' Patent:
Bronze and Brass, 60%; Crescent, 40&20%; Iron, 60%; Window Ventilating, 55%; Robinson Pat. Ventilating Sash Lock, 33⅓%; Wrought Bronze and Brass, 55%; Wrought Steel, 55%.
Pullman Patent Ventilating Lock..25%
Reading.....40%

## Machines—Boring—
*Com. Upr't, without Augers*, $2.00@2.25
*Com. Angl'r, without Augers*, $2.25@2.50
Swan's Improved.....40&10%
Angular
Jennings', Nos. 1 and 4.....35&5%
Millers' Falls..... 5.75
Snell's, Rice's Pat. 2.50 2.75

### Corking—
Reisinger Invincible Hand Power.....₱ doz. $48.00

### Fence—
Williams' Fence Machines....each, $5.50

### Hoisting—
Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

### Ice Cutting—
Chandler's.....12½%

### Washing—
| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $54.00 |
| Champion Rotary Banner No. 1 | $54.00 |
| Standard Champion No. 1 | $48.00 |
| Standard Perfection | $26.00 |
| Cint Square Western | $30.00 |
| Uneeda American, Round | $30.00 |

### Mallets—
*Hickory*.....45&5@50%
*Lignumvitæ*.....45&5@50%
*Tinners' Hickory and Applewood*.....*doz. 45&5@50%*

### Mangers, Stable—
Swett Iron Works.....50%

### Mashers, Vegetable—
Western W. G. Co., Potato....60&10%

### Mats, Door—
Elastic Steel (W. G. Co.), new list..50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

### Mattocks—
See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—
Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10@60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.....30%

### Mowers, Lawn—
*NOTE.—Net prices are generally quoted*
| *Cheapest* | *all sizes,* | $1.85@2.00 |
|---|---|---|
| *Cheap* | *all sizes,* | $2.00@2.50 |
| *Better Grade* | *all sizes,* | $2.50@4.50 |

| | 12 | 14 | 16 | 18-in. |
|---|---|---|---|---|
| *High Grade* | $4.50 | 4.75 | 5.00 | 5.25 |

Continental.....60&5%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.50%

## Nails—
*Wire Nails and Brads, Miscellaneous*.....85&10@85&10&5%
*Cut and Wire,* See *Trade Report.*
*Hungarian, Finishing, Upholsterers' &c.* See *Tacks.*

### Horse—
| Nos. | 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Champlain | 28 | 26 | 25 | 24 | 23 | .....50% |
| Coleman | 13 | 12 | 12 | 11 | 11 | .....net |
| New Haven.. | 23 | 21 | 20 | 19 | 18 | ...40&5% |

Western.....₱ lb 8½¢
*Jobbers' Special Brands*.....*per lb.9@10¢*

### Picture—
| | 1½ | 2 | 2½ | 3 | in. |
|---|---|---|---|---|---|
| *Brass H'd.* | .45 | .55 | .60 | .70 | .. gro |
| *Por. Head* | 1.10 | 1.10 | 1.10 | | .. gro |

### Nippers—
See *Pliers and Nippers.*

### Nuts—
*Cold Punched:* *Off list.*
*Square, Blank or Tapped*..*4.90@5.00¢*
*Hexagon, Blank or Tapped*..*5.30@5.40¢*
*Square, Blank, C. & T.5.20@5.30¢*
*Hexagon, Blank, C. & T*..*5.90@6.00¢*
*Hot Pressed:*
*Square, Blank*.....5.10@5.20¢
*Hexagon, Blank*.....5.50@5.60¢
*Square, Tapped*.....5.00@5.10¢
*Hexagon, Tapped*.....5.40@5.50¢

## Oakum—
*Best*.....lb., 6½¢
*U. S. Navy*.....lb., 6¢
*Navy*.....lb., 5¢
*Plumbers' Spun Oakum*.....3¾¢
*In carload lots ⅛¢ lb. off, f.o.b. New York.*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—
*Brass and Copper*.....50&10%
*Tin or Steel*.....65&10&5@70%
*Zinc*.....65&10&5@70%
*Chase or Paragon:*
*Brass and Copper*.....50&10%
*Tin or Steel*.....65&10%
*Zinc*.....65&10%
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers— Can— *Per doz.*
*Sprague, Iron Handle*....30@35¢
*Sprague, Wood Handle*...35@40¢
*Sardine Scissors*.....$1.75@3.00
National.....50&10%
Stowell's Sprague.....₱ doz. 35@45¢
Vim Tin Shear and Can Opener, ₱ doz., 75c.; per gro., $7.50

### Egg—
Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

## Packing—
*Asbestos Packing, Wick and Rope*.....17@22¢

### Rubber—
**(*Fair quality goods.*)**
*Sheet, C. I*.....11@12¢
*Sheet, C. O. S*.....11@12¢
*Sheet, C. B. S*.....12@13¢
*Sheet, Pure Gum*.....40@45¢
*Sheet, Red*.....40@50¢
Jenkins' '96, ₱ lb 80¢.....25@25&5%

### Miscellaneous—
*American Packing*...lb. 7@10 ¢
*Cotton Packing*.....lb. 16@25 ¢
*Italian Packing*.....lb. 9@12½¢
*Jute*.....lb. 4@ 4½¢
*Russia Packing*.....lb. 8@11 ¢

### Pails, Creamery—
R. M. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ₱ doz.

### Pails, Water, Well, &c.—
See *Buckets.*

### Pans— Dripping—
*Standard List*.....65&10%

### Fry—
*Common Lipped:*
| *Nos.* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| *Per doz.* | $0.75 | 0.80 | 0.90 | 1.10 | 1.30 |

### Refrigerator, Galva.—
| *Inch* | 12 | 14 | 16 | 18 |
|---|---|---|---|---|
| *Per doz* | $1.75 | 2.25 | 2.80 | 3.15 |

### Roasting and Baking—
Regal, R. M. Co., ₱ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ₱ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ₱ gro.:
| No. 40 | 50 | 60 | 140 | 150 | 160 |
|---|---|---|---|---|---|
| $30.00 | 35.00 | 42.00 | 34.00 | 39.00 | 46.00 |

### Paper—Building Paper
| *Asbestos:* | lb. |
|---|---|
| *Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.* | 6¢ |
| *Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.* | 8¢ |
| *Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.* | 7¢ |

*Rosin Sized Sheathing:* *Per roll*
*Light weight, 25 lbs. to roll*.....35@40¢
*Medium weight, 30 lbs. to roll*.....40@45¢
*Heavy weight, 40 lbs. to roll*.....56@60¢
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton*.....$18.00
*Red Rope Roofing, 250 sq. ft. per roll*.....$1.75

### Tarred Paper—
*1 ply (roll 300 sq. ft.), ton*.....$32.50@35.50
*2 ply, roll 108 sq. ft.*.....55¢
*3 ply, roll 108 sq. ft.*.....75¢
*Slater's Felt (roll 500 sq. ft.)*.70¢

### Sand and Emery—
*Flint Paper and Cloth*..50&10@60%
*Garnet Paper and Cloth*....*%*
*Emery Paper and Cl'h*..50&10@60%

### Parers— Apple—
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Bonanza Improved.....each $6.50
Daisy.....₱ doz. $4.00
Dandy.....each $7.50
Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
Little Star.....₱ doz. $5.00
New Lightning.....₱ doz. $7.00
Reading 72.....₱ doz. $3.25

Reading 78.....℔ doz. $6.25
Rocking Table.....℔ doz. $6.20
Turn Table '98.....℔ doz. $6.00
White Mountain.....℔ doz. $5.00

### Potato—

Saratoga .....℔ doz. $7.00
White Mountain.....℔ doz. $6.00

### Picks and Mattocks—

*List, Feb. 23, 1899*.....75@75&5%
Cronk's Handled Garden Mattock, ℔ doz., $6.40.....33⅓%

### Pinking Irons—

See *Irons, Pinking.*

### Pins, Escutcheon—

*Brass* .....50&10@60%
*Iron, list Nov. 11, '85*..60@60&10%

### Pipe, Cast Iron Soil—

*Carload lots.*
*Standard, 2-6 in.*50&10@50&10&5%
*Extra Heavy, 2-6 in*.....65&10%
*Fittings* .....70&10@70&10&5%

### Pipe, Merchant—

*Consumers, Carloads.*

| | Steel. Blk. | Steel. Galv. | Iron. Blk. | Iron. Galv. |
|---|---|---|---|---|
| ⅛ & ¼ in. | 71% | 55% | 68% | 52 % |
| ⅜ in. | 73½ | 59% | 70% | 56 % |
| ½ in. | 75% | 63% | 72% | 60 % |
| ¾ to 6 in. | 79% | 69% | 76½% | 66¼% |
| 7 to 12 in. | 74% | 59% | 71½% | 56 % |

### Pipe, Vitrified Sewer—

*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....85@86%
*Second-class* .....90%
*NOTE.—Market irregular.*

### Pipe, Stove—

| Edwards' Nested: | C. L. | L. C. L. |
|---|---|---|
| 5 in., per 100 joints | $7.00 | $8.00 |
| 6 in., per 100 joints | 7.50 | 8.50 |
| 7 in., per 100 joints | 8.50 | 9.50 |

### Planes and Plane Irons—

#### Wood Planes—

*Bench, first qual*.....35@35&10%
*Bench, second qual*...45@45&10%
*Molding* .....30@30&10%
Bailey's (Stanley R. & L. Co.).....40%
Chapin-Stephens Co.:
Bench, First Quality.....35%
Bench, Second Quality.....45%
Molding and Miscellaneous.....30%
Toy and German.....35%
Chaplin's .....60%
Union .....60%

#### Iron Planes—

Bailey's (Stanley R. & L. Co.).....40%
Chapin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Union .....60%

#### Plane Irons—

*Wood Bench Plane Irons*.....25@25&10%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Stanley R. & L. Co.....35%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—

Kohler's Eclipse.....℔ doz. $8.50

### Plates—

*Felloe* .....lb. .4@4¼¢
Self-Sealing Pie Plates (R. M. Co.), ℔ doz. $2.00.....50%

### Pliers and Nippers—

*Button Pliers*....75&10@75, 10, 5%
*Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.*
*Gas Pipe*.. 7 8 10 12-in.
$2.00 $2.25 $2.75 $3.50
Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's .....60%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....40%
P., S. & W. Tinners' Cutting Nippers .....50%
Wm. Schollhorn Co.:
Bernard, 33⅓%; Elm City, 33⅓%; Lodi, 50%; Paragon, 50%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

### Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&5%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10&5%
Extension Sights.....30@30&10&5%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels.....67½%
Disston's Pocket Levels.....67½%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable .....40&7½%
Stanley R. & L. Co.....66⅔%
Stanley's Duplex.....33⅓%
Woods' Extension.....33⅓%

### Poachers, Egg—

Buffalo Steam Egg Poachers, ℔ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

### Points, Glaziers'—

*Bulk and 1-lb. papers*.....lb. 10¢
*½-lb. papers*.....lb. 9@10¼¢
*¼-lb. papers*.....lb. 9¾@11¢

### Pokes, Animal—

Ft. Madison Hawkeye.....℔ doz. $3.25
Ft. Madison Western.....℔ doz. $4.00

### Police Goods—

*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ℔ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ℔ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ℔ doz., $3.00; No. 2 (1 qu.), $9.72....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ℔ doz. 50¢; ℔ gro. $4.50; ½ lb boxes, ℔ doz. $1.25; 1 lb boxes, ℔ doz. $2.25.
U. S. Liquid, 8 oz. cans, ℔ doz., $1.25; ℔ gro. $12.00.
Barkeepers' Friend Metal Polish, ℔ doz., $1.75; ℔ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ℔ doz. .....$2.00

### Stove—

Black Eagle Benzine Paste, 5 lb cans, ℔ lb 10¢
Black Eagle, Liquid, ½ pt. cans, ℔ doz. 75¢
Black Jack Paste, ¾ lb cans, ℔ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ℔ gr. $5.75.....10%
Dixon's Plumbago.....℔ lb 8¢
Fireside .....℔ gr. $2.50
Gem, ℔ gr. $1.50.....10%
Japanese .....℔ gr. $3.50
Jet Black.....℔ gr. $3.50
Peerless Iron Enamel, 10 oz. cans, ℔ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....℔ doz. $1.00
Black Silk, 5 oz. box.....℔ doz. $0.75
Black Silk, ½ pt. liq.....℔ doz. $1.00

### Poppers, Corn—

*1 qt., Square*.....gro. *$8.00*
*1 qt., Round*.....gro. *$9.00*
*1½ qt., Square*.....gro.*$10.00*
*2 qt., Square*.....gro.*$12.00*

### Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

### Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—

See *Parers, Potato.*

### Pots, Glue—

*Enameled* .....40%
*Tinned* .....35%

### Powder—

*In Canisters:*
*Duck, 1 lb*.....each 45¢
*Fine Sporting, 1 lb*....each 75¢
*Rifle, ½-lb*.....each 15¢
*Rifle, 1-lb*.....each 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$6.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 9.75 |

Robin Hood Sm'less Shot Gun..50&20%

### Presses—

#### Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

#### Seal Presses—

Morrill's No. 1, ℔ doz., $20.00.....50%

### Pruning Hooks and Shears

See *Shears.*

### Pullers, Nail—

Cyclops .....50%
Miller's Falls, No. 3, ℔ doz., $12.00..33⅓&10%
Morrill's No. 1, Nail Puller, ℔ doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, case lots, ℔ doz., No. 2, $6.00; No. 3, $5.50.
Giant No. 1, ℔ doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, ℔ doz., 75c.: ℔ gro., $6.00

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | *$0.30* | *.45* | *.60* | *1.05* |

*Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55*

| *Inch* | 2 | 2¼ | 2½ |
|---|---|---|---|
| *Hot House, doz.* | *$0.65* | *.85* | *1.20* |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz.* | *$0.16* | *.19* | *.23* | *.30* |
| *Inch* | 1¼ | 2 | 2¼ | 2½ |
| *Side, doz.* | *$0.25* | *.40* | *.55* | *.80* |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

### Sash Pulleys—

*Common Frame; Square or Round End, per doz, 1¾ and 2 in*.....*16@19¢*

*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....*17@19¢*
Acme.....1⅞ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.....℔ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal .....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

### Pumps—

*Cistern* .....60@60&10%
*Pitcher Spout*.....80@80&10%
*Wood Pumps, Tubing, &c*..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....℔ doz. $6.75
Flint & Walling's, Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list) .....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

### Pump Leathers—

*Plunger and Lower Valve—Per gro.:*

| *Inch*... | 2 | 2¼ | 2½ | 2¾ |
|---|---|---|---|---|
| | *$2.20* | *2.50* | *2.75* | *3.00* |
| *Inch*... | 3 | 3¼ | 3½ | 3¾ | 4 |
| | *$3.30* | *3.60* | *3.85* | *4.10* | *4.40* |

*Plunger Cup Leathers—Per 100:*

| *Inch*... | 2½ | 3 | 3½ | 4 |
|---|---|---|---|---|
| | *$2.75* | *3.85* | *5.00* | *6.00* |

### Punches—

*Saddlers' or Drive, good*..... *doz. 50@75¢*
*Spring, single tube, good quality* .....*$1.75@2.00*
*Revolving (4 tubes)*..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00 .....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard .....33⅓%
Lodi, 50%; Paragon.....50%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co...40%
Tinners' Solid, P., S. & W. Co., ℔ doz., $1.44.....60%

## Rail—Barn Door, &c.—

*Sliding Door, Painted Iron*.... 2½@2¾¢
*Sliding Door, Wrought Brass, 1½ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..℔ ft. 2¾¢
O. N. T. Rail.....2½¢
Griffin's:
xxx, ℔ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ℔ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ℔ 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T. ℔ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....℔ 100 ft. $4.00
Lawrence Bros.:
℔ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ℔ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ℔ ft., 11¢..50%
None Better.....℔ ft. 3¾¢
Standard .....℔ ft. 4 ¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1⅛ x 3-16, $3.25; 1¼ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ℔ ft., No. 31, 9¢; No. 32, 14¢; No. 35, 22¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.
Stowell's:
Cast Rail.....℔ ft. 1¾¢
Steel Rail, Plain.....2¾¢
Wrought Bracket, 1 3-16 in....℔ ft. 3¢
Wrought Bracket, 1½ x 5-16..℔ ft. 7¢
Swett's Hylo, ℔ ft. 11¢.....60%
P. L. B. Steel Rail.....℔ 100 ft. $3.00
No. 0, 1 x 3-16.....℔ 100 ft. $2.75

### Rakes—

*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ℔ doz., net.....$4.25
Cronk's:
New Champion Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ℔ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00.....60%
Queen City Lawn, ℔ doz., 30 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, ℔ doz.....$1.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....℔ doz. $3.45
Lawn Queen, 24-tooth.....℔ doz. $3.60
Paragon, 20-tooth.....℔ doz. $2.75
Paragon, 24-tooth.....℔ doz. $3.00
Steel Garden, 14-tooth....℔ doz. $2.40
Malleable Garden, 14-tooth, ℔ doz. $1.75@2.00

### Rasps, Horse—

Disston's .....75%
Heller Bros.' .....75&50&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—

Boras—I C.....60%
Fox Razors, ℔ doz., No. 42, $20.00; No. 41, $20.00; No. 82, Platina, $25.00. } 40 & 10 Dis.
Red Devil.....50%
Silberstein:
Carbo Magnetic, $18.00; Griffon, No. 65, $15.00; Griffon, No. 00, $12.00; all other Razors, 40%.

### Safety Razors—

Kampfe Bros.:
Star Safety, 25%; Star Interchangeable, 25%; Star Safety Corn, 25%.
Silberstein .....40%

### Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9½, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P., 33⅓%; 2904 PN., 33⅓%; 0924 N., 33⅓%; 02084 N., 33⅓%; 002904 PN., 33⅓%; 802 N., 33⅓%.
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P., 102 PN, 202 P., 202 PN, 102 PR., 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*

*Japanned, Electroplated and Bronzed* .....70%
*White Porcelain Enamel*....60%
*Solid Brass or Bronze Metal, 40&10%*

### Revolvers—

*Single Action*.....95¢@*$1.00*
*Double Action, except 44 cal*.*$1.85*
*Double Action, 44 caliber*....*$2.00*
*Automatic* .....*$3.25*
*Hammerless* .....*$3.75*

### Riddles, Hardware Grade

*16 in*.....*per doz*.*$2.50@$2.75*
*17 in*.....*per doz*.*$2.75@$3.00*
*18 in*.....*per doz*.*$3.00@$3.25*

### Rings and Ringers—

#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | *$0.70* | *0.75* | *0.80 doz.* |
| *Copper* | *$1.00* | *1.15* | *1.40 doz.* |

Rea's Improved Self-Piercing, Copper, 2 in., ℔ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

#### Hog Rings and Ringers—

*Hill's Rings, gro. boxes.$4.00@4.50*
*Hill's Ringers, Gray Iron*..... *doz. 50@55¢*
*Hill's Ringers, Malleable Iron*.. *doz. 70@75¢*
*Blair's Rings*...*per gro.$4.75@5.25*
*Blair's Ringers.per doz. $0.60@ .65*
*Brown's Rings*..*per gro.$5.00@5.50*
*Brown's Ringers.per doz.$0.60@ .65*

### Rivets and Burrs—

*Copper* .....45@45&5%
*Iron or Steel*.....75@75&5%

### Bifurcated and Tubular—

*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—

Acme, Stowell's Anti-Friction.....50%
Cronk's Stay No. 65, $0.90; No. 50 .....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..℔ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....℔ doz. 65¢
Hinge Adjustable Stay.....℔ doz. 90¢

### Rope—

*Manila, 7-16 in. diam. and larger:*
*Pure* .....lb., 12½¢
*Sisal, 7-16 in. diam. and larger:*
*Pure* .....lb., 9¢
*Sisal, 7-16 in. diam. and larger:*
*No. 2 quality*.....lb., 7¾¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:*
*Mixed* .....lb., 7¾¢
*Pure* .....lb., 9¢
*Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:*
*Mixed* .....lb., 7¾¢
*Pure* .....lb., 9¢
*Cotton Rope:*
*Best, ¼-in. and larger*..16½@18¢
*Medium, ¼-in. and larger*, 13½@16½¢
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope:*
*Thread, No. 1, ¼-in. & up*, lb.7½¢
*Thread, No. 2, ¼-in. & up*, lb..7¢
Old Colony Manila Transmission Rope .....℔ lb 17½¢

### Wire Rope—

*Galvanized* .....37½&2½%
*Plain* .....45&2½%

### Ropes, Hammock—

Covert Mfg. Co.:
Jute, 45%; Sisal.....33⅓%

### Rules

*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....27½&10&10%
Ivory .....35@35&10&10%
Miscellaneous .....50@50&10&10%
Stephens' Combination.....55@55&10%
Stationers' .....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood .....62½%
Ivory .....45%
Miscellaneous .....60%
Zig Zag.....40%
Zig Zag, Pin Joint.....42½%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

### Sash Balances—
See *Balance, Sash.*

### Sash Locks—
See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Atkins':
Circular .....60%
Band .....50&10@60%
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw, 40%; Wood Saws, 40%; Hand, Compass, &c., 40%.
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide.....60%
Band, ⅛ to 1¾.....60%
Crosscuts .....45%
Narrow Crosscuts.....50%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....25%
Woodsaw Blades.....25%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d190, D8, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....30%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....30%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....40%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A A..25%
Disston's:
Concave Blades.....25%
Keystone Blades.....35%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180.....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades....35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....30%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades.....30&10&5%
Sterling Hack Saw Frames...30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades.....25%
Victor Hack Saw Frames.....40%

### Scroll—

Barnes, No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

### Scales—

*Family, Turnbull's....50@50&10%*
*Counter:*
*Hatch, Platform, ½ oz. to 4 lbs. .....doz. $5.50*
*Two Platforms, ½ oz. to 8 lbs. .....doz. $16.00*
*Union Platform, Plain.$1.70@1.90*
*Union Platform, Stpd.$1.85@2.15*
Chatillon's:
Eureka .....25%
Favorite .....40%
Crocers' Trip Scales.....60%
Chicago Scale Co.:
The "Little Detective"....25 lbs 30%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

### Scrapers—

*Box, 1 Handle.....doz. $2.00@2.25*
*Box, 2 Handle.....doz. $2.50@2.60*
*Ship....Light, $2.00; Heavy, $4.50*
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....45%
Chapin-Stephens Co., Box, 30@30&10%

### Screens, Window and Frames—

Maine Screen Frames.....40&10&5%
See also *Doors.*

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@ 2.75; 1¼, $3.00@3.25; 1¼, $3.50@3.75*
*Bench Wood .....25@25&5%*
*Hand, Wood .....25@25&5%*
H. Buss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand.....25%

### Coach, Lag and Hand Rail—

*Lag, Cone Point, list Oct. 1, '99 .....75&15%*
*Coach, Gimlet Point, list Oct. 1, '99 .....75&10%*
*Hand Rail, list Jan. 1, '81.... 70&10@75%*

### Jack Screws—

*Standard List.....75&10@80%*
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50%
Swett Iron Works.....75@80%

### Machine—

*List Jan. 1, '98:*
*Flat or Round Head, Iron.... 50@50&10%*
*Flat or Round Head, Brass.... 50@50&10%*

### Set and Cap—

*Set (Iron).....80@80&5%*
*Set (Steel), net advance over Iron .....25%*
*Sq. Hd. Cap.....75%*
*Hex. Hd. Cap.....75%*
*Rd. Hd. Cap.....60&10%*
*Fillister Hd. Cap.....60&10&10%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron.....87½&10@..%*
*Round Head, Iron...85 &10@..%*
*Flat Head, Brass.....82½&10%*
*Round Head, Brass..80 &10@..%*
*Flat Head, Bronze...77½&10@..%*
*Round Head, Bronze.75 &10@..%*
*Drive Screws.....87½&10%*

### Scroll Saws—
See *Saws, Scroll.*

### Scythes—

| | Per doz. |
|---|---|
| *Grass, No. 1, Plain....* | $6.25@6.75 |
| *Clipper, Bronzed Webb.* | $6.50@7.00 |
| *No. 3 Clipper, Pol'd Webb..* | $6.75@7.25 |
| *No. 6 Clipper and Solid Steel,* | $7.00@7.50 |
| *Bush, Weed and Bramble, No. 2.* | $6.50@7.00 |
| *Grain, No. 1.....* | $8.25@8.75 |
| *Bronzed Webb, No. 1..* | $8.50@9.00 |
| *Nos. 3 and 4 Clipper, Grain..* | $8.75@9.25 |
| *Solid Steel, No. 6.....* | $9.25@9.75 |

### Seeders, Raisin—

Enterprise .....25@30%

### Sets—Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders .....30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel.....₩ doz sets $9.00

### Sets, Nail—

*Octagon .....gro. $3.50@3.75*
Buck Bros.....27½%
Cannon's Diamond Point, ₩ gro.$12.40
Mayhew's .....₩ gro. $9.00
Snell's Corgated, Cup Pt...₩ gro. $7.20
Snell's Knurled, Cup Pt...₩ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.₩ gro. $7.50

### Rivet—

*Regular list.....75@75&10%*

### Saw—

Atkin's:
Criterion .....40%
Adjustable .....40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate .....20%
Disston's, Star, Monarch and Triumph .....30%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.00...50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.60.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal Cross Cut.....₩ doz. $8.00
Royal, Hand.....₩ doz. $4.50
Taintor Positive.....₩ doz. $4.75

### Shaving—

Fox Shaving Sets, No. 30 .....₩ doz., net, $24.00
Smith & Hemenway Co.'s.....60%

### Sharpeners, Knife—

Chicago Wheel & Mfg. Co.....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ₩ doz.....$1.50
Mounted Kitchen Sand Stone, ₩ doz.....$1.50
Natural Grit Carving Knife Hones, ₩ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ₩ doz.....$1.50
Quick Edge Pocket Knife Hones, ₩ doz.....$2.50

### Skate—

Smith & Hemenway Co.....20%

### Shaves, Spoke—

*Iron .....doz.$1.10@1.25*
*Wood .....doz.$1.75@2.25*
Bailey's (Stanley R. & L. Co.).....45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co.....30@30&10&10%
Goodell's, ₩ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

### Shears—

| *Cast Iron..* | 7 | 8 | 9 in. |
|---|---|---|---|
| *Best ....* | $16.00 | 18.00 | 20.00 gro. |
| *Good ...* | $13.00 | 15.00 | 17.00 gro. |
| *Cheap ...* | $5.00 | 6.00 | 7.00 gro. |

*Straight Trimmers, &c.:*
*Best quality Jap....70@70&10%*
*Best quality, Nickel..60@60&10%*
*Fair quality, Jap....80@80&5%*
*Fair quality, Nickel..75@..&10%*
*Tailors' Shears.....40@40&10%*
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Sheep, 1900 list, 30&10&5%; Grass, 50&10%; Horse or Mule, 50&10%

### Tinners' Snips—

*Steel Blades.....20&5@20&10%*
*Steel Laid Blades.....40&10@50%*
Forged Handles, Steel Blades, Berlin, 50@50&5%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Forged Handles.....20%

### Pruning Shears—

Cronk's Hand Shears.....33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₩ doz. $18.00.....25%
Disston's Pruning Hook only, ₩ doz. $12.00.....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P. S. & W. Co.....33⅓%
Wilkinson's Hedge, Wilcut Brand, 60&10%
Wilkinson's Lawn and Border, Wilcut Brand.....60&10%

### Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Reading .....40%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

### Sliding Shutter—

Reading list.....40%
R. & E. list.....33⅓%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge .....65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge .....20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge.....20%
Expert, Metal Lined and Pigeon, 10, 12, 16 and 20 gauge.....33⅓
Robin Hood, Low Brass.....20&5%
Robin Hood, High Brass.....30&5%

### Shells, Loaded—

*Loaded with Black Powder..40%*
*Loaded with Smokeless Powder; medium grade.....40&5%*
*Loaded with Smokeless Powder, high grade.....40&10&10%*
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron .....per keg $4.00*
*Steel .....per keg $3.75*
Burden's, all sizes.....₩ keg $3.90

### Shot—

*Drop, up to B, 25-lb. bag....$1.85*
*Drop, B and larger ..... per 25-lb. bag, $2.10*
*Buck, 25-lb. bag.....$2.10*
*Chilled, 25-lb. bag.....$2.10*
*Dust, 25-lb. bag.....$2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1902..40%*

### Snow Shovels—

*Long Handle.....$2.75@3.00*
*Wood and Mail, D. Handle, $3.25@3.50*

### Sieves and Sifters—

*Hunter's Imitation ..... gro.$9.50@10.00*
*Hunter's Genuine ..... per gro. $12.00@12.50*

Buffalo Metallic Blued, R. M. Co., ₩ gr.

| 14&16 | 16&18 | 18&20 |
|---|---|---|
| $13.20 | $13.50 | $14.40 |

### Sieves, Seamless Metallic

—Per dozen.—

| *Mesh* | 14 | 16 | 18 | 20 |
|---|---|---|---|---|
| *Iron Wire....* | $1.05 | 1.05 | 1.10 | 1.20 |
| *Tinned Wire..* | $1.15 | 1.15 | 1.20 | 1.30 |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested....doz. $0.90@0.95*
*Mesh 20, Nested....doz. $1.00@1.05*
*Mesh 24, Nested....doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in....60&5%*
*20 x 40 to 24 x 50 in.....55%*
*24 x 60 to 24 x 120 in.....35%*
Barnes' low list:
Up to and including 20 x 36 in....60%
20 x 40 to 24 x 50 in.....55%
*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron.....70@75&10%*
*Steel .....40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates.....50@50&10%*
*Eureka, Unexcelled Noiseless.. 60&5 tens*
*Victor A, Noiseless..60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German .....40@40&10%*
Covert Mfg. Co.:
Derby, 30&2%; Yankee, 30&2%; Yankee Roller, 30&2%.
High Grade, 45%; Trojan.....45%
Jockey .....35%
Oneida Community:
Harness Snaps, 1 inch.....60&5%
Swivel Snaps.....60%
Swivels .....50%

### Snaths—

*Scythe .....50%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

#### Silver Plated—

*Good Quality.....50&10@60&5%*
*Cheap .....60@60&10%*
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton .....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

#### Miscellaneous—

*German Silver.....60@60&5%*
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

#### Tinned Iron—

*Teas .....per gro. $5@$50¢*
*Tables.....per gro. $0.50@$1.00*

### Springs—Door—

Chicago (Coil).....40&10%
Gem (Coil).....20%
Pullman (Coil).....25%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....₩ doz. $1.10

### Carriage, Wagon, &c.—

| *1¼ in. and Wider:* | Per lb. |
|---|---|
| *Black .....* | 4@4¼¢ |
| *Half Bright.....* | 4@4¼¢ |
| *Bright .....* | 4½@4¾¢ |

*Painted Seat Springs:*
*1½ x 2 x 26.....per pr. 45¢*
*1½ x 3 x 28.....per pr. 70¢*

### Sprinklers, Lawn—

Enterprise .....25@30%
Philadelphia No. 1, ₩ doz. $12; No. 2, $15; No. 3, $24.....30%
Pleuger & Henger Mfg. Co.:
Cactus, 70%; Japanese, 75%; Nationals, 65%.

### Squares—

*Nickel plated..* } *List Jan. 5, 1900.*
*Steel and Iron.* } 75@80%
*Rosewood Hdl. Try Square and T-Bevels .....60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 67½%; Iron Stock and Bevel.....20%
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....50%

### Squeezers, Lemon

*Wood, Common, gro., No. 0, $3.25@$3.50; No. 1, $3.25@$3.50.*
*Wood, Porcelain Lined:*
*Cheap .....doz. $1.00*
*Good Grade.....doz. $1.25*
*Tinned Iron.....doz. $0.75@1.25*
*Iron, Porcelain Lined...doz. $1.75*

### Staples—

*Barbed Blind.....lb. 6@6½¢*
*Electricians', Association list.. 80&10&10&10%*
*Fence Staples, Plain, $2.25; Galvanized .....$2.55*
*Poultry Netting Staples ..... per lb. 3¼@3½¢*
Grand Crossing Tack Co.'s list..80&10%

### Steels, Butchers'—

Dick's .....30%
Foster Bros.....30%
C. & A. Hoffmann's.....40%

### Steelyards—....30@30&10%

### Stocks and Dies—

*Blacksmiths' .....50@50&10%*
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

### Stoners, Cherry—

Enterprise .....25@30%

### Stones—Oil, &c.

Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit.60%
Gem Corundum Axe, Single or Double Grit.....60%
Gem Corundum Slips.....60%
Gem Corundum Razor Hones...50%
Pike Mfg. Co., 1904 list: ₩ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips.....90¢
Rosy Red Slips.....80¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%

Hindostan No. 1, B'g'lar. ₱ lb 8¢
Hindostan No. 1, Sma l.. ₱ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in. ₱ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢
} 25¼%

### Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ₱ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ₱ gro. $9.00
One gross or more ₱ gro. $7.20
Lots of 10 gross or more ₱ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S. ₱ gro. $6.00
Extra Indian Pond S. S. ₱ gro. $7.50
No. 1 Indian Pond S. S. ₱ gro. $7.00
No. 2 Indian Pond S. S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro. $4.50
Quick Cut Emery ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers ₱ gro. $9.00

### Stops— Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 60@60&10%

### Plane—

Chapin-Stephens Co. 20%

### Straps— Box—

Cary's Universal, case lots 25&20%

### Stretchers, Carpet—

*Cast Iron, Steel Points, dos. 60@60&10%*
*Socket dos. $1.60*
Bullard, ₱ doz. $4.00
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00 20%

### Strops, Razor—

Star Diagonal Strop 25%

### Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

### Sweepers, Carpet—

National Sweeper Co.: ₱ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00

*NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $3.50 per dozen on twenty-five-dozen lots.*

Streator Metal Stamping Co.:
Model E, Sanitaire ₱ doz $25.00
Model A, Sterling ₱ doz. $25.00
Model B, Sterling, Nickeled ₱ doz. $23.00
Model B, Sterling, Japanned ₱ doz. $21.00
Model C, Sterling ₱ dos. $21.50
Model D, Sterling ₱ doz. $19.50

### Tacks, Finishing Nails, &c.

*New List, May 1, 1905.*

*American Carpet Tacks* 90&40@—%
*American Cut Tacks* 90&40@—%
*Swedes Cut Tacks* 90&40@—%
*Swedes Upholsterers'* 90&50@—%
*Gimp Tacks* 90&50@—%
*Lace Tacks* 90&40@—%
*Trimmers' Tacks* 90&40@—%
*Looking Glass Tacks* 65@—%
*Bill Posters' and Railroad Tacks* 90&50@—%
*Hungarian Nails* 85@—%
*Finishing Nails* 70&10@—%
*Trunk and Clout Nails* 80@—%

*NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.*

### Miscellaneous—

*Double Pointed Tacks* 90&5 *or 6 tens*

See also Nails, Wire.

### Tanks, Oil— Each.

Emerald, R. M. Co. 30-gal. $3.40
Emerald, R. M. Co. 60-gal. $4.25
Queen City, R. M. Co. 30-gal. $3.65
Queen City, R. M. Co. 60-gal. $4.50

### Tapes, Measuring—

*American Asses' Skin* 50@—%
*Patent Leather* 25@30&5%
*Steel* 33 1-3&5%
*Chesterman's* 25@25&5%

Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger... per 100 lbs. $2.75@$3.00*

### Thermometers—

*Tin Case* 80&10@80&10&5%

### Ties, Bale—Steel Wire—

*Single Loop* 80&2½%
*Monitor, Cross Head, &c.* 70%

### Brick Ties—

Niagara Brick Ties 25&10%

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White 20@20&5%

### Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers, 50%; Hay Forks, 50%; Fork Pulleys, 50%.

### Miniature—

Smith & Hemenway Co.'s 25%

### Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

### Ship—

L. & I. J. White 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00*
*Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida* 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 60%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes 8½@9¢*
*Mouse, Round or Square Wire, doz. 85@90¢*

Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ₱ doz. $15.12
No. 3, Rat, ₱ dos. $6.50; case of 50 $5.75 dos.
No. 3½, Rat, ₱ doz. $5.25; case of 72 ₱ gro. $1.70 doz.
No. 4, Mouse, ₱ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ₱ doz. $3.00; case of 150 $2.25 doz.

### Trimmers, Spoke—

Wood's E I. 50%

### Trowels—

Disston Brick and Pointing 25%
Disston Plastering 30%
Disston "Standard Brand" and Garden Trowels 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McFarlin, Plastering 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ₱ doz. $16.00
Grocery ₱ doz. $15.00
Daisy Stove Trucks, Improved Pattern ₱ doz. $18.50
McKinney Trucks each $10.00
Model Stove Trucks ₱ doz. $18.50

### Tubs, Wash— *No.* 1 2 3

*Galvanized, per doz.* $4.25 3.75 5.25
Galvanized Wash Tubs (R. M. Co.):
No. 1 2 3 10 20 30
Per doz., net $5.70 6.30 7.20 6.60 7.20 8.10

### Twine, Miscellaneous—

*Flax Twine: BC. B.*
*No. 9, ¼ and ½-lb. Balls* .22@24¢
*No. 12, ¼ and ½-lb. Balls* .18@20¢
*No. 18, ¼ and ½-lb. Balls* .16@18¢
*No. 24, ¼ and ½-lb. Balls* .16@18¢
*No. 36, ¼ and ½-lb. Balls* .15@17¢
*Chalk Line, Cotton ¼-lb. Balls* 25@30¢
*Cotton Mops, 6, 9, 12 and 15 lb. to doz.* 10@18¢
*Cotton Wrapping, 5 Balls to lb., acording to quality* 14½@20¢
*American 2-Ply Hemp, ¼ and ½-lb. Balls* 13@14¢
*American 3-Ply Hemp, 1-lb. Balls* 13@14¢
*India 2-Ply Hemp, ½ and ½-lb. Balls (Spring Twine)* 9¢
*India 3-Ply Hemp, 1-lb. Balls* .9¢
*India 3-Ply Hemp, 1½-lb. Balls, 2, 3, 4 and 5-Ply Jute, ½-lb. Balls* 7½@8½¢
*Mason Line, Linen, ½-lb. Bls.* 9½@10½¢
*No. 26½ Mattress, ¼ and ½-lb. Balls* .46¢
*Wool, 3 to 6 ply* .37¢
*B* 7¢; *A* 7½¢

### Vises—

*Solid Box* 60%

### Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch, 50%; Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect, 20%; Lightning Grip 20%
Merrill's 20%
Millers Falls 60&10%
Parker's:
Victor, 20@25%; Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

### Saw Filers—

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps 30%
Perfection Saw Clamps, ₱ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

### Wood Workers—

Massey Vise Co.:
Lightning Grip, 15%; Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe: 87 Series, 60%; 127 Series, 60&5%; No. 370, 40%.

### Wads—*Price per M.*

*B. E., 11 up* 60¢
*B. E., 9 and 10* 70¢
*B. E., 8* 80¢
*B. E., 7* 80¢
*P. E., 11 up* $1.00
*P. E., 9 and 10* 1.25
*P. E., 8* 1.50
*P. E., 7* 1.50
} Dis. 15%
*Ely's B. E., 11 and larger* $1.70@1.75
*Ely's P. E., 12 to 20* $3.00@3.25

### Ware, Hollow—

### Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled* 55%
*Ground* 60%
*Plain or Unground* 65%
*Country Hollow Ware, per 100 lbs.* $2.75
*White Enameled Ware:*
*Maslin Kettles* 70%
*Covered Wares*
*Tinned and Turned* 40%
*Enameled* 50%
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

### Tea Kettles—

*Galvanized Tea Kettles:*

| *Inch* | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| *Each* | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

### Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

### Washers—Leather, Axle—

*Solid* 80&10@80&10&10%
*Patent* 90@90&5%
*Coil:* ⅞ 1 1⅛ 1¼ *Inch.*
10¢ 11¢ 12¢ 13¢ *per box*

### Iron or Steel—

*Size bolt.* 5-16 ⅜ ½ ⅝ ¾
*Washers* $5.50 4.50 3.20 3.00 2.80
*The above prices are based on $6.00 off list.*

*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½ inch, barrel lots* ... *per lb.* 1¾@2¢

### Weather Strip—

### Flexible Felt—

Lined, per 100 ft., $2; $3; $4 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

### Wedges—

*Oil Finish* .lb. 2.70@2.80¢

### Weights—Hitching—

Covert Mfg. Co. 40%

### Sash—

*Per ton, f.o.b. factory:*
*Eastern District* $27.50@$28.00
*Southern Territory* $20.00@$23.00
*Western and Central Districts* $23.00@$25.00

### Wheels, Well—

*8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9* 80%
*10 to 18* 80&2½%
*19 to 26* 80&7½%
*27 to 36* 80&2½%
*Galvanized:*
*6 to 9* 75&5%
*10 to 14* 75&7½%
*15 to 16* 72½&10&2½%
*19 to 26* 75%
*27 to 36* 72½%
*Coppered:*
*6 to 9* 75&5%
*10 to 14* 75&7½%
*15 to 18* 72½&10&2½%
*19 to 26* 75&10&5%
*27 to 36* 75%
*Tinned:*
*6 to 14* 75&10&2½%
*15 to 18* 75&7½%
*Annealed, Steel and Tinned, on Spools* 70&10&10@70&10&10&10%
*Brass and Copper on Spools* 60&5@60&10&5%
*Brass, list Feb. 26, '96* 15%
*Copper, list Feb. 26, '96* 25%
*Cast Steel Wire* 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*List June 24 '03* 90&20@90&25%
*Brass Cup Hooks and Brass Screw Hooks* 85@—%

### Wire Cloth and Netting—

*Galvanized Wire Netting* 80&5@80&10%
*Painted Screen Cloth, 100 ft.,* $1.00@1.10
*Standard Galv. Hardware Grade:*
*Nos. 2, 2½ & 3 Mesh, sq. ft.* 3 ¢
*Nos. 4 and 5 Mesh, sq. ft.* 3¼ ¢
*No. 6 Mesh, sq. ft.* 3½ ¢
*No. 8 Mesh, sq. ft.* 4 ¢

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural* 75&10&5@80%
*Alligator or Crocodile* 70&10@75%
*Baxter Pattern S Wrenches* 70&5@70&10%
*Drop Forged S* 45@45&5%
Acme 60&10%
Alligator Pattern, 70%; Bull Dog, 70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Bemis Pipe 60%
Combination Black 40&5%
Merrick Pattern 50
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model 40&10&5&5%
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ₱ doz. $6.25
Elgin Rethreading Attachment, one die, ₱ doz. $6.25
Elgin Extra Dies, ₱ doz. $3.00
Elgin Extra Jaws, ₱ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ₱ doz. $2.10
Gem Pocket 20%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5%
Solid Handles, P., S. & W. 50&5%
Stillson 65%
Vulcan Chain 50%

### Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ₱ gross, $7.50; ₱ doz. $0.80

### Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ₱ doz. $48.00

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92* 90@90&10%

### Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

### Zinc—

*Sheet* .per 100 lbs., $8.15@8.40

# CURRENT METAL PRICES.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

## IRON AND STEEL—

### Bar Iron from store—

Refined Iron:
1 to 1½ in. round and square } ₩ lb 2.00¢
1½ to 4 in. x ⅜ to 1 in. }
1½ to 4 in. x ¼ to 5-16 ₩ lb 2.20¢
Rods—⅜ and 11-16 round and square ₩ lb 2.20¢

| Angles: | Cts ₩ lb |
|---|---|
| 3 in. x ¼ in. and larger | 2.40¢ |
| (except 3½ in. and 4 x ¼ 2.50¢) | |
| 3 in. x 3-16 in. and ⅛ in. | 2.55¢ |
| 1½ to 2½ in. x ¼ in. | 2.35¢ |
| 1½ to 2¾ in. x 3-16 in. and thicker | 2.30¢ |
| 1 to 1¾ in. x 3-16 in. | 2.25¢ |
| 1 to 1¼ x ⅛ in. | 2.40¢ |
| ⅞ x ⅛ in. | 2.55¢ |
| ¾ x ⅛ in. | 2.65¢ |
| ¾ x ⅛ in. | 3.50¢ |
| ⅝ x ⅛ in. | 4.20¢ |
| ½ x 3-32 in. | |

Tees:
1 in. 2.65¢
1¼ in. 2.45¢
1½ to 2½ in. 2.35¢
3 in. and larger 2.50¢
Beams 2.30¢
Channels, 3 in. and larger 2.30¢
Bands—1½ to 6 x 3-16 to No. 8 2.35¢
"Burden's Best" Iron, base price 3.05¢
Burden's "H. B. & S." Iron, base price 3.00¢
"Ulster" 3.10¢
Norway Bars 3.40¢
Norway Shapes 3.80¢

### Merchant Steel from Store—

| | per lb |
|---|---|
| Bessemer Machinery | 2.00¢ |
| Toe Calk, Tire and Sleigh Shoe | 2.50@3.00¢ |
| Best Cast Steel, base price in small lots | 7¢ |

### Sheets from Store—

#### Black.

| | One Pass, C.R. Soft Steel. | R. G. Cleaned. |
|---|---|---|
| No. 14 | ₩ lb 2.80 | 2.80¢ |
| Nos. 18 to 21 | ₩ lb 2.95 | 3.00¢ |
| No. 27 | ₩ lb 3.10 | 3.40¢ |
| No. 28 | ₩ lb 3.20 | 3.50¢ |

#### Russia, Planished, &c.

Genuine Russia, according to assortment ₩ lb 11¾@14¢
Patent Planished ₩ lb A, 10¢; B, 9¢, net.

#### Galvanized.

Nos. 14 to 16 ₩ lb, 3.15¢
Nos. 22 to 24 ₩ lb, 3.55¢
No. 27 ₩ lb 4.00¢
No. 28 ₩ lb, 4.25¢
No. 20 and lighter 36 inches wide, 25¢ higher.

### Tin Plates—

#### American Charcoal Plates (per box.)

A.A.A. Charcoal:
IC, 14 x 20 $6.45
IX, 14 x 20 7.70
A. Charcoal:
IC, 14 x 20 $5.50
IX, 14 x 20 6.70

#### American Coke Plates—Bessemer—

IC, 14 x 20 108 lb $4.50
IX, 14 x 20 6.50

#### American Terne Plates—

IC, 20 x 28 with an 8 lb. coating $8 70
IX, 20 x 28 with an 8 lb. coating 10.70

### Seamless Brass Tubes—

Outside Diameter. Net. Base Price 22¢

| Stubs' W. G. | ⅜ | 7-16 | ½ | 9-16 | ⅝ | ¾ | ⅞ | 1 | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4-11 | .. | .. | .. | .. | .. | .. | .. | .. | 22 | 22 | .. | .. |
| 12 | .. | .. | .. | .. | 28 | 28 | 27 | 27 | 22 | 22 | 22 | 22 |
| 13 | .. | .. | .. | .. | 29 | 29 | 27 | 27 | 22 | 22 | 22 | 22 |
| 14 | .. | .. | 29 | 29 | 29 | 27 | 27 | 27 | 23 | 23 | 22 | 22 |
| 15 | .. | 30 | 29 | 29 | 29 | 27 | 27 | 27 | 23 | 23 | 23 | 23 |
| 16 | 30 | 30 | 29 | 29 | 29 | 27 | 27 | 27 | 24 | 24 | 23 | 23 |
| 17 | 30 | 30 | 29 | 29 | 29 | 27 | 27 | 27 | 25 | 25 | 24 | 24 |
| 18 | 31 | 31 | 30 | 30 | 30 | 28 | 28 | 28 | 26 | 26 | 25 | 25 |
| 19 | 31 | 31 | 30 | 30 | 30 | 28 | 28 | 28 | 27 | 27 | 26 | 26 |
| 20 | 31 | 31 | 30 | 30 | 30 | 28 | 28 | 28 | 28 | 28 | 27 | 27 |
| 21 | 32 | 32 | 32 | 30 | 29 | 29 | 29 | 29 | 29 | 29 | 28 | 28 |
| 22 | 34 | 35 | 34 | 33 | 31 | 30 | 30 | 30 | 30 | 30 | 29 | 29 |
| 23 | 37 | 37 | 35 | 35 | 33 | 33 | 33 | 33 | 33 | 33 | 30 | 30 |
| 24 | 53 | 48 | 46 | 45 | 44 | 43 | 41 | 40 | 40 | 41 | 33 | 35 |
| 25 | 56 | 51 | 49 | 47 | 46 | 45 | 44 | 44 | 45 | 46 | 41 | 42 |

### Iron Pipe Sizes—Brass

| ⅛ | ¼ | ⅜ | ½ | ⅝ | 1 | 1¼ | 1½ | 2 | 2½ | 3 | 3½ | 4 | 4½ | 5 | 6 inch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 29 | 24 | 23 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 23 | 24 | 26 | 28 | 29¢ ₩ lb |

### Brazed Brass Tubing.

Discount from List June 6, 1898, 20&5%.
Bronze and Copper Tubing advance on Brass List 3¢

### Roll and Sheet Brass—

Discount from List June 6, 1898, 15%.

### Brass Wire.

Discount from List June 6, 1898, 15%

### Brass Rods.

Discount from List 15%

## METALS—

### Tin—

Straits Pig ₩ lb 41 @41¼¢

### Copper—

Lake Ingot ₩ lb @19¼¢
Electrolytic ₩ lb 18¾@18¾¢
Casting ₩ lb 18½@18¾¢
Sheet Copper Hot Rolled, 16 oz. ₩ lb 24¢
" " 14 " " " 24¢
Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.
Sheet Copper Polished 20 in. wide and under, 1¢ advance over Cold Rolled.
Sheet Copper Polished over 20 in. wide, 2¢ advance over Cold Rolled.
Bottoms, Pits and Flats ₩ lb 27¢ basis
Planished Copper, 1¢ ₩ lb more than Polished.

### Spelter—

Western ₩ lb 6¼ @ 6¾¢

### Zinc.

No. 9, base, casks, ₩ lb 8¼¢ | Open ₩ lb 8¾¢

### Lead.

American Pig ₩ lb 6¾@6¾¢
Bar ₩ lb 7 @7¼¢

### Solder.

½ & ½, guaranteed ₩ lb 25¼@26 ¢
No. 1 ₩ lb 23½@24 ¢
Refined 19¾@20¼
Prices of Solder indicated by private brand vary according to composition.

### Antimony—

Cookson ₩ lb 27@28¢
Hallett's 26@27¢
Other Brands 24@25¢

### Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in ingot for remelting:
Small lots 40c
100-lb lots 38c

### Old Metals.

*Dealers' Purchasing Prices Paid in New York.*

Copper, Heavy Cut and Crucible ₩ lb 16.75¢
Copper, Heavy and Wire ₩ lb 16.50¢
Copper, Light and Wire ₩ lb 15.12½¢
Heavy Brass ₩ lb 11.00¢
Light Brass ₩ lb 8.75 ¢
Lead ₩ lb 5.15 ¢
Tea Lead ₩ lb 5.00 ¢
Zinc ₩ lb 4.25 ¢
Pure Aluminum, Sheet ₩ lb 26 ¢
No. 1 Yard Wrought Long $ 5.50@16.00
Wrought Pipe $11.00@11.50
No. 1 Machinery Cast $15.00@15.50
Stove Plate $10.25@10.75


# THE IRON AGE

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